murray & associates
landscape architecture

LANDSCAPE ARCHITECT'S REPORT

incorporating

Landscape Design Statement

Arboricultural Impact Assessment

Outline Landscape Works Specification

for

Strategic Housing Development

at former O'Devaney Gardens Site

Dublin 7

May 2021

Section 1

Landscape Design Statement

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1. Introduction

This report was commissioned by the applicant, Bartra ODG Limited and has been prepared to accompany the pre-planning application for Strategic Housing Development at former O'Devaney Gardens Site, Dublin 7.

The purpose of the report is to explain the landscape context and design rationale. This report should be read in conjunction with the following drawings:

1737_PL_P_01	Landscape Masterplan - Ground Level	1:500	A0
1737_PL_P_01.01	Landscape Masterplan - Hard Landscape & Feature Plan	1:500	A0
1737_PL_P_01.02	Landscape Masterplan - Soft Landscape Plan	1:500	A0
1737_PL_P_01.03	Landscape Masterplan - Boundary Landscape Plan	1:500	A0
1737_PL_P_01.04	Landscape Masterplan - Communal Amenity & Open Space	1:500	A0
1737_PL_P_01.05	Landscape Masterplan - Central Park	1:200	A1
1737_PL_P_01.06	Landscape Masterplan - Northern Park	1:200	A1
1737_PL_P_02.1	Landscape Plan - Courtyard Block 5	1:250	A0
1737_PL_P_02.2	Landscape Plan – Courtyard Block 7 & 9	1:250	A1
1737_PL_P_03	Landscape Plan - Roof Level Masterplan	1:500	A1
1737_PL_P_03.01	Landscape Plan - Roof Level Block 5, 6, & 7	1:500	A1
1737_PL_P_03.02	Landscape Plan - Roof Level Block 9 & 10	1:500	A1
1737_PL_S_01-2	Landscape Sections - Open Space	As Shown	A1
1737_PL_S_03-4	Landscape Sections - Public Realm	As Shown	A1
1737_PL_S_05	Landscape Sections – Boundary	As Shown	A1
1737_PL_D_01	Hard Landscape & Furniture Details	As Shown	A0
1737_PL_D_02	Soft Landscape Details	As Shown	A1
1737_PL_D_03	Roof and Courtyard Build-up Details	As Shown	A1
1737_TS_PL_01	Tree Survey	1:500	A0
1737_TS_PL_02	Arboricultural Impact Plan	1:500	A0
1737_TS_DD_01	Tree Protection Details	As Shown	A3

2. Site Description

The proposed 5.2 Ha site is located in Dublin 7 and was previously known as O'Devaney Gardens. This proposed infill development is located within the heart of Dublin, with several important landmarks and features less than 2km away such a Phoenix Park, Smithfield, etc, see *Figure 2: Site Context map*. The site bounded by St. Bricin's Military Hospital to the east, Montpelier Gardens road along the southern edge, and the sides or rears of residential homes to the east and north.

Figure 1. Site Map with Road Names, Site outline in Red

The site is currently brownfield in nature. Prior to being cleared, the site contained several large housing blocks with open grassed areas between, all of which have been demolished. There is very little vegetation on site, with the only mature vegetation along the boundary at the northeast and with near the boundary of St Bricin's, which is currently a walled buffer area, see Section 2: *Arboricultural Impact Assessment* for details.

The site is gently sloped, with the highest point to the north, sloping down at an average 1% grade toward the southern edge. The site is divided with the existing O'Devaney Gardens street system and palisade fencing restricting access to the site from the street.

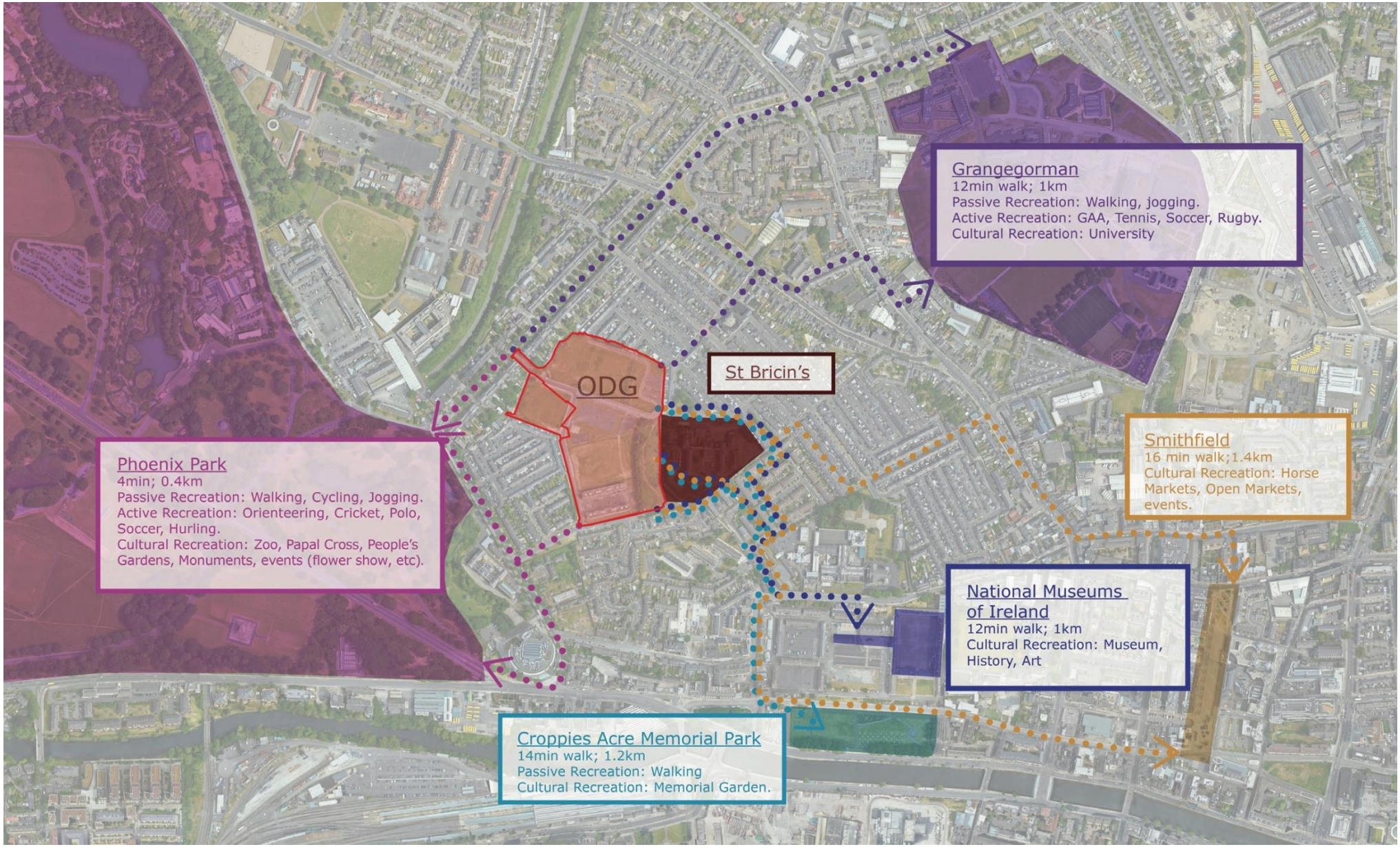

Figure 2 - Context Diagram: Adjacent Uses and Distances from site, Site outline in red

The site shares an existing boundary wall with St Bricin's Military Hospital along the eastern edge. This wall is 2m+ concrete wall with a 1m+ railing on the top, see Figure 7. There is an additional wall running north-south, 40 m from the St Bricin's boundary wall, within the site defining the buffer area with poor quality mature trees (see above). The rest of the site is surrounded by the rear or side garden walls/fences of the residential homes. Beside the southern edge, Figure 4-6, there is a row of homes that face on to Montpelier Gardens road, Figure 8.

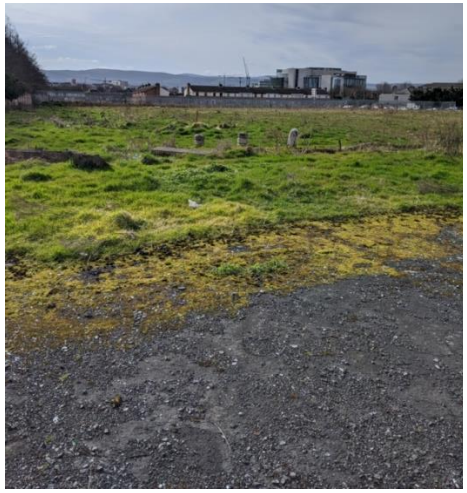

Figure 3. Site Photos facing south

Figure 4. Northeast Site Boundary

Figure 5. Northern Site Boundary

Figure 6. Western Site Boundary

Figure 7. Existing St Bricin's Military Hospital Site Boundary

Figure 8. Houses along Montpelier Gardens Figure 9. Existing St Bricin's Military Hospital Site Boundary

3. Planning Context

The site is within the Strategic Development Regeneration Area (SDRA 11): Stoneybatter, Manor Street and O'Devaney Gardens in the *Dublin City Council Development Plan 2016-2022* (SDRA 11: Section5.1.1.14). The key principles of SDRA 11 include high-density developments which are integrated into the wider neighbourhood and accompany a high-quality public realm and communal open spaces.

The SDRA states that 15% of the site shall be "*quality open green spaces*"; these spaces can be for social exchanges and serve to communicate "*a respect for natural*" (*Dublin City Council Development Plan 2016-2022, pg 286)*. The SDRA states that the public realm should accommodate multiple uses and be permeable for pedestrians and cyclist to promote integration into the adjoining community. The open space should include a neighbourhood park "*to provide recreational amenities, encourage community interaction and provide a focal point/meeting place for the wider local community*" including a multi-use games area (MUGA) and community uses. Included in the SDRA 11 boundary are the St Bricin's Military Hospital, Old Departments of Defence, and Phase 1a to the west, all of which are not part of this application. The design strategy reflects the possibility that these sites will also be governed by the SDRA during any redeveloped in the future, allowing for connections and continuation of the SDRA key principles.

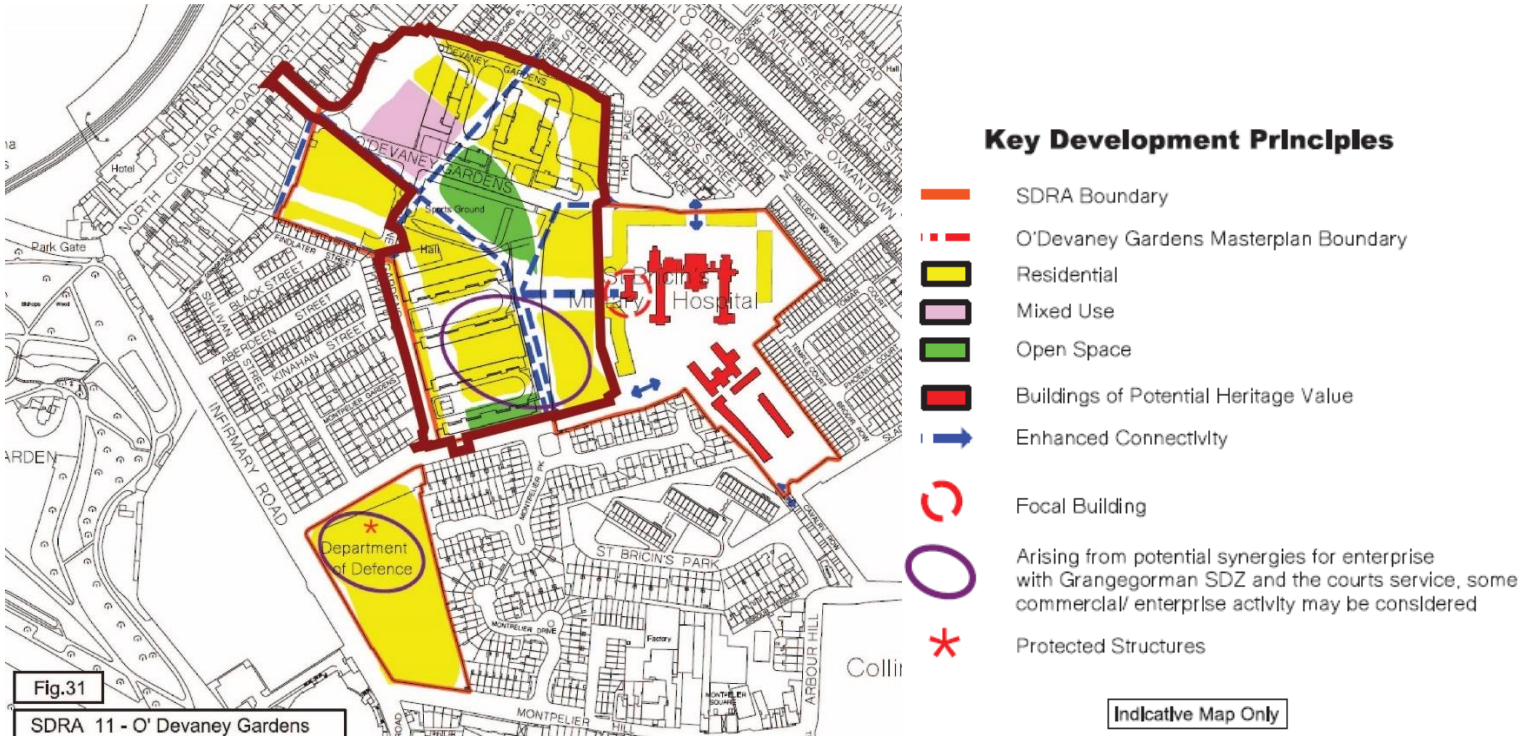

Figure 10 - Dublin City Council Development Plan 2016-2022, pg. 287; SDRA11 (site as part of this application outline in red)

Lastly, the requirements for communal open spaces and play are set out by the *2020 Sustainable Urban Housing: Design Standards for New Apartments Guidelines for Planning Authorities,* the *Dublin City Council Development Plan 2016-2022,* and the *Play here, Play there, Play everywhere: Dublin City Play Plan 2012-201.* These requirements quantity is determined by unit type and quantity, this proposal compliance is described below in the appropriate section.

See *Planning Statement* [BMA Planning] for further detail on the planning context of the site.

4. Description of the Proposed Development

The development will consist of 1,047no. residential units and all associated ancillary accommodation, site and development works. The total gross floorspace (gfa) of the overall development is 102,940sqm, of which 100,646sqm is residential and 2294sqm are non-residential uses. There are also non-residential uses, including retail units, a café, a creche, and a community facility, See *Architectural Design Report* [OMP] for additional information on site and building uses and layout.

The landscape proposals include public realm, public open space, communal amenity, and boundary/site integration, as well as general landscape/spatial design. There are two key public open spaces; a large central park with a MUGA, a local park to the north, and a central plaza, as well several smaller open spaces. Site vehicular access will be provided via the existing entrances to the site from North Circular Road, Montpellier Gardens and Thor Place, with an upgrade to the existing internal roads comprising a central boulevard between North Circular Road and Montpellier Gardens and a new street to Thor Place. There are communal amenity spaces at ground level, in courtyards, and at roof level, depending on the block.

The adjacent development, known as Phase 1, is already under construction and separate to this application. See below diagram of uses and block layouts.

Figure 11 - Propose Development - Landscape Plan

4.1. Landscape Strategy Overview

The quality of the open spaces is a key consideration in the development of the scheme. The enhancement of the design was based on the following aspirations:

- Creating safe and integrated communities
- Creating inclusive public open spaces for and accessible by everyone
- Delivering usable communal amenity spaces throughout the development for residents
- Establishing a high-quality environment that can be easily maintained.

Consideration has been given to the coordination of design with other disciplines; from aesthetics and quality of the overall development to the performance of design layout and selected material. Location of uses and tree positioning has been carefully considered and coordinated with services and safety considerations.

The provision of quality open spaces is a key consideration as the provision of these spaces can have a positive impact on the health and well-being of residents of the development and promotes community engagement and socialization.

Within the development, there is a defined hierarchy of open spaces. Primary open spaces serve a recreational function as well as working as social spaces for the community to meet and gather. Defined areas are provided in a variety of forms, such as:

- Central Park
    - Diversity of Play: Multi-use games area, natural play, and structured play
    - Community Uses: Art, gallery/performance space, gathering space, and seating area.
    - Multi-use: Open space for relaxation, kick-about, events, etc.
- Northern Park
    - Play: Structural/Natural Play area
    - Community Uses: Open green space with seating areas and community garden.
- Urban Open Space: central open space node with urban amenities
- Active Streetscapes with seating, bins, and general amenities.

- Permeable and integrated spaces
- Safe and useable communal amenity spaces for all residents

This scheme strives to create a sense of identity through the form of public space, improve the experience of the users, and blending the edges into the surrounding neighbourhood. The interaction of residents within the scheme is an important element in the 'life' of the scheme. Therefore, the design provides several multi-use community areas, where chance meetings, play, and relaxation can occur, as well as events, such as performances, markets, and community gardens. Seating has been provided within and along the edge of these open spaces, offering resting and gathering points. The open spaces within the development will be softscaped areas with planting and treelines, while primarily focused on creating usable spaces for the proposed residents, the scheme will also provide accessible green open space to the entire area.

Reflecting the urban nature of this development, the public realm design focuses on creating a strong sense of urban character, through materials and scale, using high-quality space and durable materials to improve public realm environments.

4.2. Open Spaces

As previously mentioned, by the DCC Development Plan's SDRA 11 required that 15% of the site is open amenity space. Of the 5.2 Ha site, approximately 7,800 sqm is required. Overall, 8,247 sqm of parks, pocket parks, and open space is provided within the development, 16% of the site.

Figure 12 - Communal Amenity & Open Space Diagram

4.2.1.Central Park

The central park is the largest open space in the development which is approximately 5,500 sqm. The open space contains pockets of active uses and large open passive spaces for multiple activities. The space unfolds off a central W-E pathway, aligned with a historic chapel within the St Bricins gound. St Bricins is also part of SDRA 11 and potential will be redeveloped in the future. The park has been designed to blend into any future development within St Bricins as well as function independently of any connection with St Bricins. The existing St Bricin's wall, which is to be retained due to the existing security requirements of that site, will be screened with high planting and trees, which edge a seating area with benches and mounds, which can be used as a performance space/outdoor classroom. The trees and planting will be largely removed and the seating re allocated when St Bricins's existing wall is removed and integrated into the park.

The central open space has several play areas, for all ages and abilities (see play strategy for details) as well as open grassed areas, edge with trees to create places for gathering, events/markets, play, etc. Own door residential units are facing on to the park from Block 9 &7 (northern and southern edge) providing passive surveillance to the park. A structured play space for younger children is located across a small plaza from café/retail area in the northwest corner. A multi-use games area, located along the central path in the centre of the park, provides a more active play area for older children. Both areas are buffered from the surrounding own-door residential units with a low mound and planting.

The space is connected to a north-south linear park with seating along it, which connects several blocks to the space. The link will allow for ease of pedestrian and cyclist movement, creating connections for the residents to the south of the development to access the northern amenities, such as the retail street and central open space. The linear space has own-door residential units facing on to the site with small private threshold areas at the entrances. This will create a character of a pedestrian-only residential street that has passive surveillance. The linear areas will also provide a bio-diversity corridor of continuous canopy north-south and connecting to the central park's canopy (east-west) with upward branching trees and low shrubs for a clear line of sight through the space.

Figure 13 - Central Park Plan

4.2.2. Northern Park

Located in the northeast portion of the site, near to the creche and Ross Street connections, a playful plaza contains a collection of playful elements and seating areas, for adults and children alike to explore and play in. This space transitions into an open green space, with a soft central path, with the existing Ashford community garden (approx. 260 sq.m.), improved and preserved along the northern edge, along with a new community garden area in the centre of the park (approx. 300 sq.m.), doubling the area of the community garden. The existing palisade fence and wall which separate the existing community garden will be replaced with a railing and hedge, with the intention for the community gardens could be merged in the future. The new community garden area was selected since it is not overshadowed and for its proximity to the existing community garden.

The northern park transition into a shared street near its eastern edge, where a local bottle bank is located. The local residential street will have minimal vehicular movements, allowing for the street to be a shared-use (see roads report for additional information). A secondary entrance, located at Ashford Cottages, will be framed by an improved community pocket park with a new boundary treatment and seating.

Figure 14 - Northern Park Plan

4.3. Streetscapes

4.3.1.The Boulevard

The boulevard will be the main transport corridor through the site and the gateway into the area. While this road will be a key vehicular and bus corridor, the pedestrian experiences were prioritized through surface treatments, street furniture, and street tree planting, creating a pedestrian scale and movement along the footpaths.

SuDs are incorporated through the integration of a continuous modular tree pit system along the edge of the road. Using permeable paving along parking bays and resin-bound tree pit allow for hard waring and sustainable tree growth and water retention.
The adjacent development, known as Phase 1a, will be integrated into the development through the planting and seating within a small plaza, reflecting the proposed development within Phase 1a and the material palette of this proposed development.

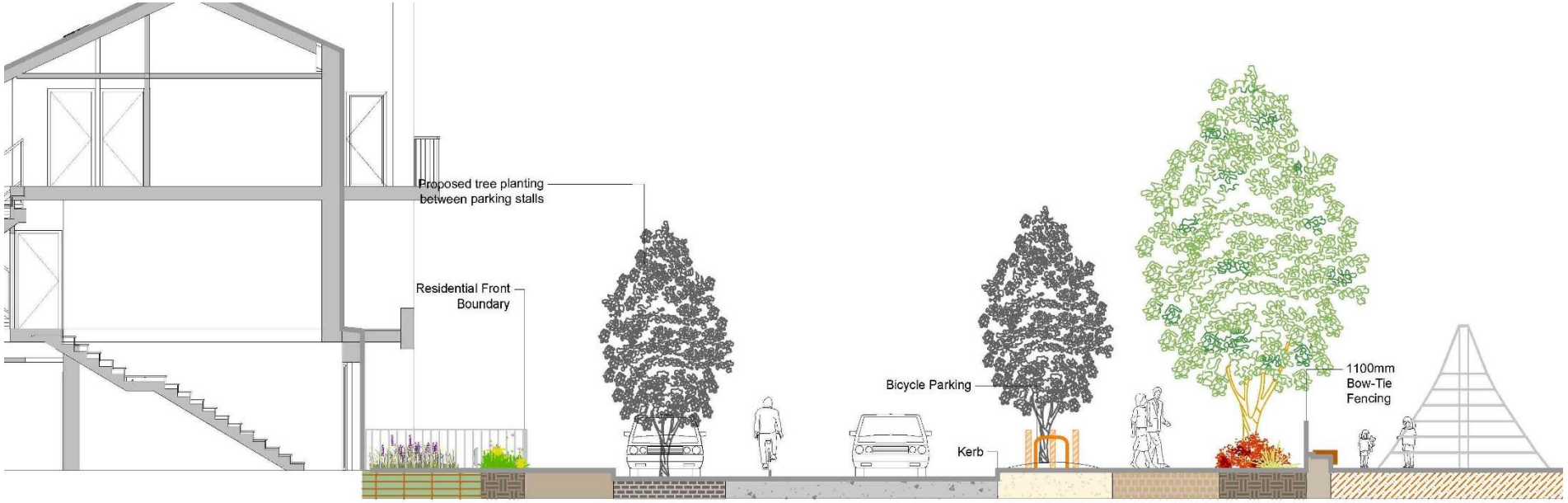

Figure 15 – Section of the Boulevard

4.3.2.The Link Street

The link street will have active frontages, with retail uses along both sides of the street. The streetscape will reflect the need to prioritize pedestrian movement. The street and footpaths will be paved with a similar material with a kerb and high contrast tactility strip providing a visual and physical signal for movement. There will also be traffic calming measures along the roadway, as well as benches and street trees along the footpath, creating a pedestrian scale along the retail street.

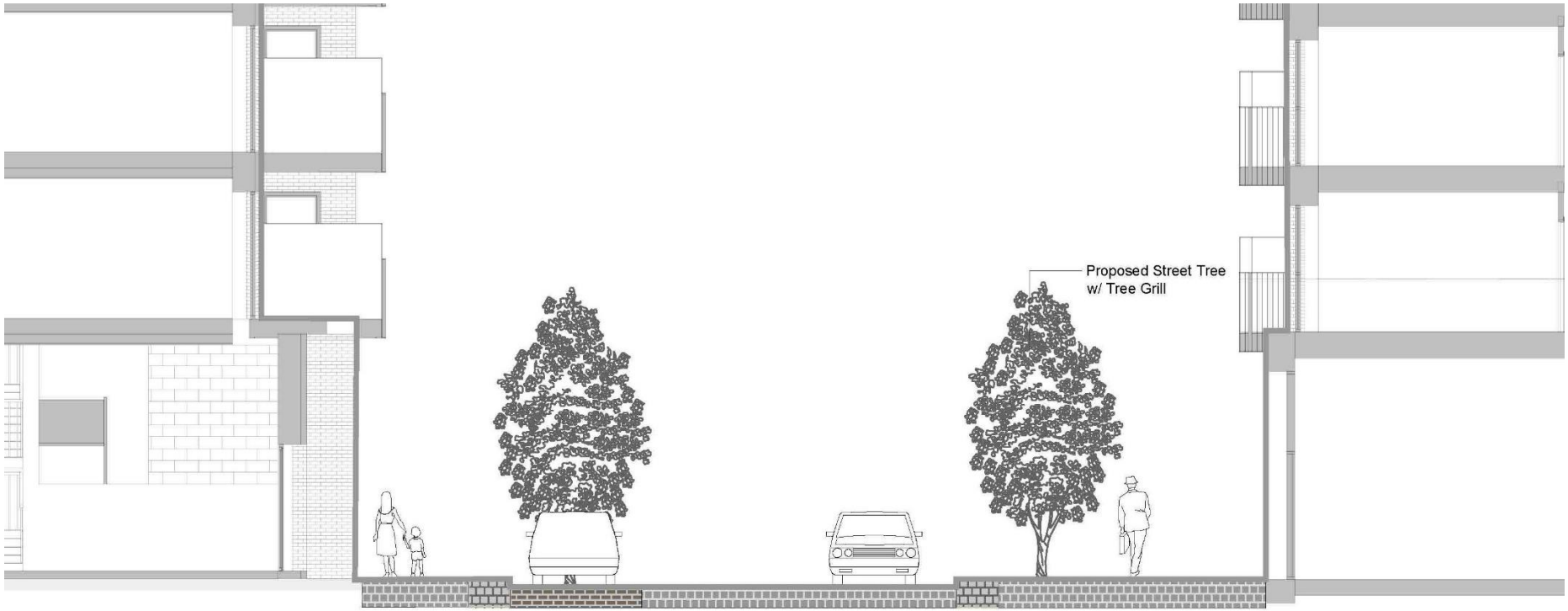

Figure 16 – Section of Link/Retail Street

4.3.3.The Local Residential Street

There are two local residential streets which will be shared streets, Between block 5&3 and west of block 2. The street between block 5&3 is aligned to slow local use only vehicles. There is limited parking and in additions to the residents of block 3, will be used mainly by bins lorries and emergency vehicles. The laneway/local street adjacent to block 2 preserves the adjacent residents of North Circular Road rear garden access and allow for maintenance and emergency access. These streets will have shared surface, kerb-less edges, with narrow entrances and traffic calming measures, allowing for the space's uses to expand past vehicular.

Figure 17 – Section of Residential Street Adjacent to Block

4.4. Communal Amenity Spaces

Communal Amenity Space is provided for each block, per the *2020 Sustainable Urban Housing: Design Standards for New Apartments* requirements. Each block's communal amenity space is located at ground level, within a podium level courtyard, and/or a roof level. Each area is designed to function for a variety of communal activities. Each courtyard design reflects the preliminary daylight analysis, the results of which can be found in the *Architectural Design Report* [OMP]. Below is the breakdown of the are communal areas requirement/provided, see 1737_PL_P_01.04 for additional information.

Block(s)	Use/Location	Communal Area Required	Communal Area Provided	Percentage Over Requirement Area
Block 2	**Ground level communal space**	**444 sq.m.**	**480 sq.m.**	**8%**
Block 3	Creche	N/A	-	-
Block 4	**Private Gardens**	**40sq.m. per house**	**Average 68 sq.m.**	**70%**
Block 5	Courtyards	-	1328 sq.m.	
	Roof Terraces	-	918 sq.m.	
	Total	**2076 sq.m.**	**2246**	**8%**
Block 6	Ground Level	-	356 sq.m.	
	Roof Terraces	-	430 sq.m.	
	Total	**631 sq.m.**	**786 sq.m.**	**25%**
Block 7	Courtyards	-	730 sq.m.	
	Roof Terraces	-	1466 sq.m.	
	Total	**1706 sq.m.**	**2197 sq.m.**	**29%**
Block 8a,8b	**Private Gardens**	**40sq.m. per house**	**Average 63 sq.m.**	**58%**

Block 8c	Duplex Lower (Private Gardens total)	-	226 sq.m.	
	Duplex Upper (Adjacent Pocket Park)	-	200 sq.m.	
	Total	**114 sq.m.**	**426 sq.m.**	
Block 9	Courtyards	-	800	
	Roof Terraces	-	872	
	Total	**1216 sq.m**	**1594 sq.m**	**31%**
Block 10	Ground Level	-	402	
	Roof Terraces	-	430	
	Total	**631 sq.m**	**832 sq.m**	**32%**

Since most of the communal areas are to be constructed on the podium above the underground car park as well as at roof level, the area planting is raised or mounded in areas to provide appropriate soil depth. For the communal area provided at ground-level, they are contained in using built elements or have a railing, allowing for use specifically for residents of the adjacent block. The roof terraces include passive recreation space and seating areas, with views of the Dublin mountains from many, and screening elements to protect from wind and overlook direct residents.

The communal amenity areas are design to provide similar amenities to the residents of each block. Each space has seating, gathering, open space and play areas. While each are uniquely design, providing similar uses allow for residents from each block access to a shared useable space. Please see the drawing set for details.

Figure 18 - Proposed Communal Amenity Diagram

4.5. Movement and Permeability Strategy

Ease of movement through the site is essential for the usability and success of the open spaces. The development strategy is focused on the walkability and permeability of the site. The development, while allowing for essential vehicular circulation, prioritizes pedestrian and cyclist connections, with dedicated high-quality corridors with planting and non-slip paving and surfacing. Vehicular prevention element, such as bollards, raised edges, and planting, are used to prevent unwanted vehicular circulation in pedestrian areas, with removal bollard at location where emergency access might be need. The scheme incorporates the expansion of permeability into the potential redeveloped St Bricins site. The eastern edge treatment and planting has been designed to allow for the future removal of the boundary and for potential continuous movement into the St Bricins, if /when the site is redeveloped.

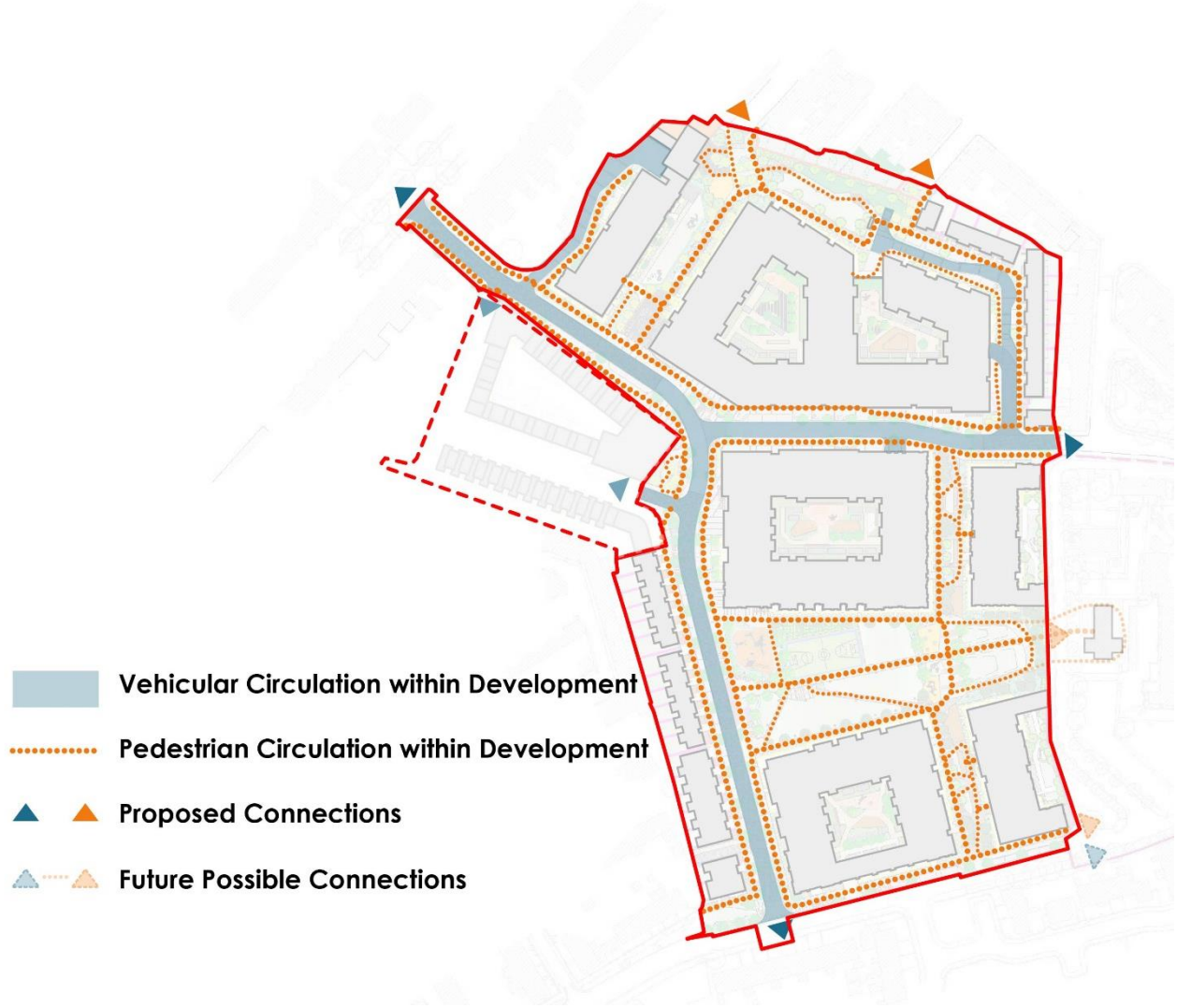

Figure 19- Diagram of Circulation through the development

4.6. Boundary Treatments

The site is mostly edged with existing residential house's rear or side gardens, some with existing concrete block walls (see Figure 4-7), and others with existing palisade fencing, preventing site access. New boundary treatment solutions were selected for the areas where no boundary exists, where it need to be replaced, and where it need to be improved through the rendering of the existing boundary. See drawings 1737_PL_P_03 *Landscape Masterplan – Boundary Treatment* and 1737_PL_S_05 *Landscape Sections – Boundary* for details.

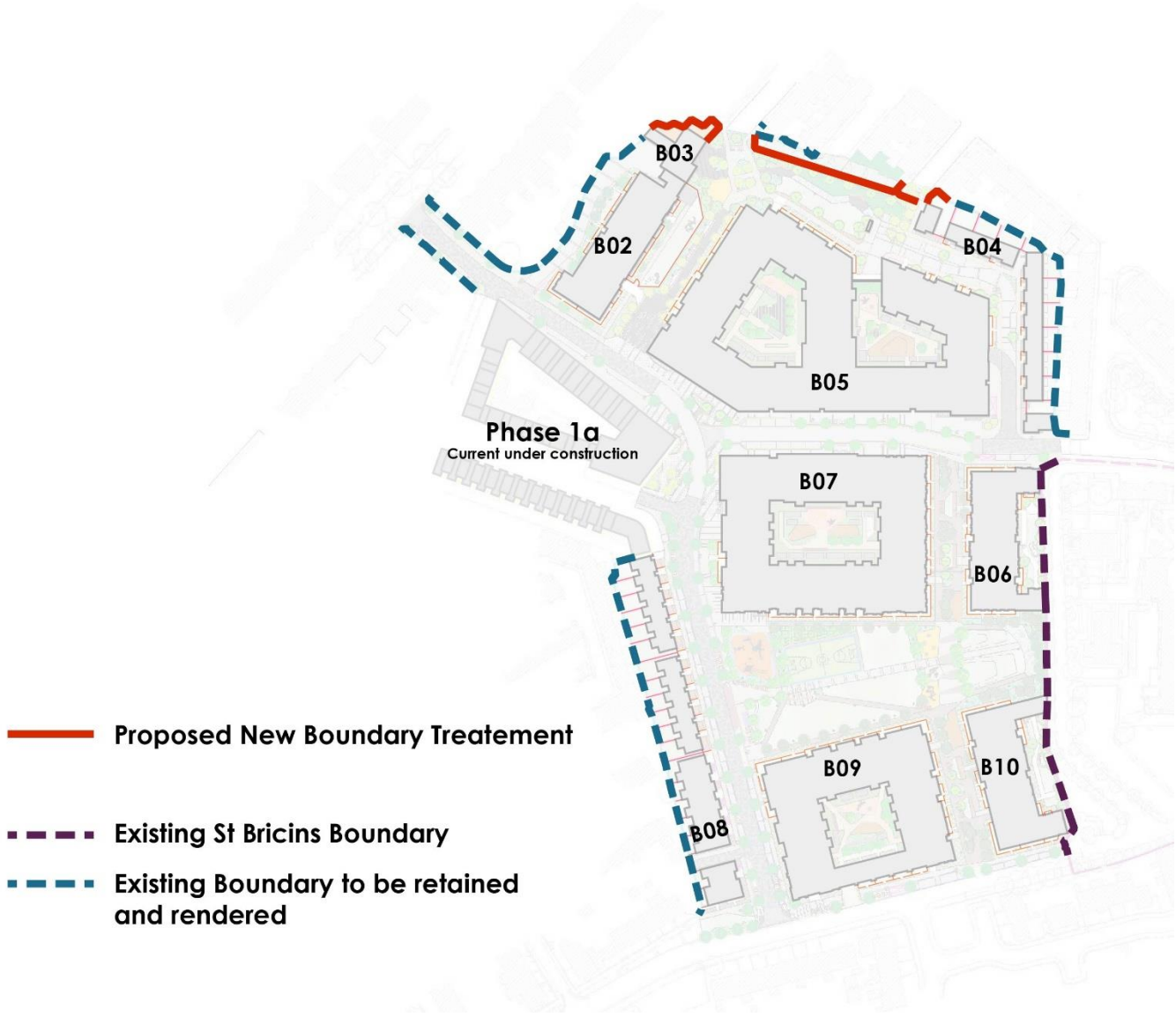

Figure 20 - Boundary Treatment Diagram

4.7. Play Strategy

The development proposal at this scale of residential unit requires a variety of play areas, for different ages and activities. Within the development there is over 900 sq.m of play in the public realm, with an additional 426 sq.m. of play with blocks courtyards and the creche play area.

NOTE: All play surface + equipment to be design according to BS1176 and BS1177 standards. All Play Areas to be ROSPA Certified. All Public playspace details and equipment to be agreed on with DCC Parks before construction

Figure 21 - Play Area Diagram

4.7.1.Junior Structure play area

The junior structure play area will be an enclosed play area with play element for multiple ages and abilities, with a preference towards younger children. This area will also be in direct line of sight of the proposed café/retail unit within Block 7 and have seating, allowing for resting/social areas for caregivers and users. Below are precedent images for the structure play space.

Figure 22: Tower/Slide Play Element

Figure 23: Low balance elements

Figure 24: Swing Play Element

Figure 25: Climbing Play Element

4.7.2.Multi-Use Game Area

The Multi-Use Games Area (MUGA) will be a variable use area for different types of games and play. The MUGA will be approximately 13m x 26m, with low fence boundaries incorporating goals/ball nets at the ends. The northern edges are heavily planted with low mounds to buffer the high-intense use from own door units in Block 7. This area, while for multiple age groups, is targeted at older children, allow for more intense play and activity.

Figure 26 - MUGA Precedents (Mayfield Park, Dublin3)

4.7.3.Playful/Natural Play Areas and Open Grass Areas (kick-about)

Natural play elements and Playful areas are distributed throughout the development, creating pockets of play. These areas will have soft surfaces, grass, wet pour, or chipped bark, and logs/boulders or other elements creating changes in heights. See below precedents of the types of space that are proposed.

Figure 27 - Playful Space Precedent (1)

Figure 28 - Playful Space Precdent(2)

Figure 29: Natural Play Space Precedent(1)

Figure 30: Natural Play Space Precedent(2)

Large sections of the Central Park are grassed areas, which can be used by groups or combined for larger play. This grasses area will allow for more types of play and gathering, such as informal kick-about or group activities.

Figure 31: Open Grass area divided by a path

Figure 32: Mounded area

4.8. Biodiversity and SUDs Strategy

The *Greening Stoneybatter* strategy is under development by Dublin City Council's Parks and Landscape Services for the surrounding area. Many principles from the scope of this document have been incorporated into this development. This will allow for this site to match and surpass the new aesthetic that *Greening Stoneybatter* strategy will create for the region.

This proposed development includes the planting of 250+ trees and 6,000+ sqm of shrubs perennials, see drawing for proposed planting palette, in an area with few green spaces or street trees. Where feasible, native and/or pollinating trees and plants are proposed to enhance local biodiversity. See 1737_PL_P_01.02 (*Landscape Masterplan - Soft Landscape Plan*) for information on variety and mix.

Several SuDs measures have been incorporated into the landscape proposals, including permeable paving within parking bays, resin bound covered modular tree pit. These measures are localized and will be detailed in conjunction with the civil engineers.

Figure 33 - Biodiversity Strategy Diagram

4.9. Materials and Site Furniture

The palette of materials complements and integrates the proposed architectural forms and materials within the landscape. Materials were selected for their robustness, durability, and high quality. Each open space/character area has a unique paving or surface palette of colour and pattern, to indicate transitions between spaces and distinguish uses. See Section1: Appendix 1 for precedents of proposed material and planting. All material in the public spaces which are to be taken in charge to be agreed upon with DCC before construction.

Figure 34: Confalt and Grass

Figure 35: Concrete Footpath

Figure 36: Sample type of paving for public open space (P.C. concrete block with stone aggregate)

Figure 37: Wet pour

Figure 38: Artificial Turf

Figure 39: Bark Chipped Surface

Figure 40: Bench

Figure 41: Cycle Stand

Figure 42: Bollard

5. Stage 2 Comments and Responses

The following are responses to the memo received from Dublin City Council and An Board Pleanala, with reference to the initial comment.

5.1. Memo: An Bord Pleanala

3. Site Connections
Further consideration/justification of the documents as they relate to the interface between the eastern side of the proposed development site with St Bricin's and the northern portion of the site with Ross Street/Ashford Place/Ashford Cottages to specifically address the following:
• **The possibility for future seamless connection between the site and St Bricin's to the east.**
• Assessment of visual impacts on St Bricin's to include existing and permitted structures within that site.
• Consideration of potential impacts on the development potential of adjacent lands within St Bricin's.
• The documentation should demonstrate how apartment block length and articulation will assist with pedestrian and cyclist permeability through the site.
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• **Consideration of safe, secure and passively supervised pedestrian and cyclist connections to the north of the site, in the vicinity of Ross Street/Ashford Place/Ashford Cottages.**
The further consideration of these issues may require an amendment to the documents and/or design proposals submitted relating to the density and layout of the proposed development.

The central park was redesigned to safeguard the future St Bricins connections, with the central path aligned with St Bricins' chapel and the eastern park responding to existing and potential park condition/needs. See Movement and Permeability for more information.

The northern park stretched most of the northern boundary, with own-door residential units facing onto it from Block 5. This will provide passive surveillance on to the park and at both the Ross Street and Ashford Cottages connections.

4. A detailed landscaping plan for the site which clearly differentiates between areas of public, communal and private open pace and which details exact figures for same. Details should also include proposals for hard and soft landscaping including street furniture, where proposed, which ensures that areas of open space are accessible, usable and available for all. Pedestrian permeability through and beyond the site should be outlined. Details of the interface between private and communal areas should also be detailed. Additional cross sections, CGIs and visualisations should be included in this regard. The landscaping plan should critically assess the best and most appropriate way to incorporate underground car parking ventilation structures.

See Landscape Strategy overview for the location and drawing 1737_PL_P_01.04 for details on the required and provided Open Space and Communal Amenity for the residents of the proposed blocks. See 1737_PL_S_03-4 (Landscape Sections - Public Realm) for typical sections of threshold/interface details and 1737_PL_S_05 (Landscape Sections – Boundary) for details on boundary treatment for communal space and edge details.

Materials, planting, street elements were selected to be universally accessibly and long-lasting. Surfaces and entrances are level or gently sloped, with high contrasting colour and tactile strips to indicate crossing. There are materials changes to indicate entrances and use change, e.g. footpath to park. See Movement and Permeability Strategy for information and diagrams on pedestrian permeability within and connecting the site.

See *Architectural Design Report* and Drawings [OMP] for vent locations and specifications. All vents, with the courtyards, are incorporated into the landscape design, within planting beds or flush with pathways.

5.2. Memo: Dublin City Council Response

5.2.1. General Planning

"Pedestrian and cycle connections:
…The planning authority would, however, raise concerns in relation to portions of the proposed layout, and the proposed pedestrian and cycle routes. In particular, it would appear that the provision of Block B04a B04b and B05, as a single block, would appear to dissect a clear desire line between Ross Street and Montpelier Gardens and is recommended that the applicant should consider the potential for the provision of a dedicated north-south pedestrian and cycle route along the western side of the site." (PG 6)

Non-vehicular movement and uses were prioritized during the design development. There are several north-south connections through the site, with the primary access from Ross Street, through the northern par continuing between block 2 and 4 to connect with the boulevard footpath. A secondary route exists from Ashford place, along the shared street to the local retail street, and then down the pedestrian link between block 7 and 6 and block 9 and 10. These multiple routes allow for ease of pedestrian movement through the site. These routes are primary edge with own-door units, providing passive surveillance on the space, as well as seating and planting along these routes, creating a safe accessible space for movement and usability.

"Northern Linear Park:

The planning authority would raise concerns with the proposed layout of the Northern Linear Park, which adjoins Ross Street. Based on the information currently submitted the function and operation of this area is unclear, as it would appear that a significant proportion of the site would be utilised as a pedestrian and cycle route rather than a public park. It is recommended that the applicant provide further information on the function and operation of this space.

It is also noted that the proposed access from Ashford Cottages would appear to provide a narrow and poorly laid out space. It is considered that this element of the proposal should be redesigned to maintain the established building lines on Ashford Cottages as well as providing details of the treatment of the interface with the cul de sac at the end Ashford Place." (PG 6-7)

The northern linear park was re-designed during the stage 2 process, with a focus on preserving existing amenities and creating a larger parks space with space for multiple characters/uses. The northern park still allows for movement through, while also creating stopping points throughout soft landscaped areas. See Northern Park for additional information on the re-design.

"Central Neighborhood Park:
In relation to the Central Neighborhood Park, the masterplan has set out the overall design intention to create a clear east-west visual and pedestrian link into St Bricins Hospital grounds. It would appear that the positioning of the MUGA could restrict this element and concerns are maintained that this the current layout would not provide a legible route through the site, as envisioned by the proposed masterplan. Further consideration of this element is required as part of any application." (PG 7)

The Multi-use Games Area (MUGA) has been relocated within the central park, safeguarding the future connections to St Bricins. The central path alignment has been moved slightly to align the park of the adjacent chapel within St Bricins.

"Proposal enhances the urban design context for public spaces and key thoroughfares and inland waterway/marine frontage. thus enhancing a sense of scale and enclosure while being in line with requirements in relation to flood risk.

The planning authority supports the intention of the design team to introduce active ground floor uses along primary street frontages. however it is considered that elements of the proposed ground floor strategy adjoining the proposed Central Neighborhood Park. would require further consideration. The current application would provide a single commercial unit (cafe). adjacent to the primary public open area. This is not considered to be an acceptable design response and it is recommended that the application provide a revised design response that would involve the provision of an active frontage to the neighborhood park. It is recommended that consideration be given to the centering of the proposed community use adjoining the public open space.

Furthermore. it is noted that the proposed games area would be positioned within the close proximity of the residential units and therefore likely to result in a negative impact because of noise and light spillage. This required to be addressed by the applicant." (PG 10)

Own-door units have been introduced along most blocks' frontages, providing passive surveillance on the adjacent street/open space. Where there are potential clashes of use and adjacent open space activity, landscape planting and mounding has been provided to screen the adjacent use.

> *"Communal Amenity Space:*
> *The 2018 Apartment Guidelines require that communal amenity space is provided at the standard of at least 5sqm for one bedroom apartments, 7 sqm for a two bedroom apartment and 9 sqm for a three-bedroom apartment. This proposed application would seek to provide external communal amenity spaces located at ground, podium and roof levels. Section 4.4 of the submitted Landscape Architects Report sets out that each block would be provided with the required communal open space. Furthermore, the overall provision would be in excess of the required standards. This is supported by the planning authority. It is noted that section 3.8 of the Design Statement sets out that the proposed communal and public open spaces would significantly exceed the minimum BRE requirements. This is strongly supported and a detailed daylight and sunlight assessment is required to be provided as part of a future planning application.*
>
> *Limited information has also been provided in relation to the accessibility of the proposed social and affordable units to communal amenity spaces and internal amenity areas. Clarification on the management and operation of these spaces should be provided." (PG 12)*

See Boundary Treatments section and drawings 1737_PL_P_03 *Landscape Masterplan – Boundary Treatment* and 1737_PL_S_05 *Landscape Sections – Boundary* for details of the types of boundaries that are used along with the ground level communal amenity space.

> "Landscaping and Public Open Space:
> The applicant has submitted a Landscape Architect Report, which outlines the proposed landscaping strategy for the application site, as well as communal external terraces, situated at upper floor levels. In relation to public open space, the City Development Plan requires the provision of "quality open green spaces consisting of a minimum of 15% of the site area".
>
> The proposed development would meet this requirement and it is considered that the two main public open spaces would be of high quality in terms of design and layout. Furthermore, it is considered that the proposed spaces would be designed to ensure informal supervision by residents and be visually and functionally accessible to the maximum number of dwellings. As set out in the report above, the planning authority would require that the environmental quality, in terms of sunlight, be demonstrated as part of a future submission." (PG 13)

See Landscape Strategy for diagram of open space uses. See *Architectural Design Report* [OMP] for details on the sunlight with open, private and communal spaces.

5.2.2.Parks and Recreation

3.1Existing trees
Retention of suitable trees should occur where existing trees and new public open spaces overlap and the applicant shall review trees 0602 to 0612 to determine if they can be retained within the proposed new park.
Please review the proposals to retain the existing elms with regards to the proximity of proposed new buildings and boundary proposals.
Detailed tree surveys prepared by a qualified arboriculturists shall be presented in consideration of the above issues, showing accurate tree positions with measured canopies. *(PG 2)*

These trees (*Alnus cordata*, Alder) are of low arboricultural value due to the existing damage and the poor condition of the trees. This will likely shorten their life span and therefore it would be beneficial to replace during the development to ensure a strong tree canopy within that area. Additionally, these trees will inhibit the site development and might endure additional stress during construction if retained. Lastly, the condition and density of these large trees are not suited to the new public open space and will hinder the future extension into St Bricins.

3.2 Boundaries to apartments blocks
Secure boundaries shall be provided between apartment blocks' facades and open space and will include a private/ communal open space buffer strip as well as railings and walls. *(PG 2)*

Communal space boundaries have been amended and a secure boundary has been added, see Boundary Treatments section and drawings 1737_PL_P_03 *Landscape Masterplan – Boundary Treatment* and 1737_PL_S_05 *Landscape Sections – Boundary*

3.3 Play space
All internal courtyards for residential block will be provided with play space of good play value including at least 4 play equipment units for younger children. Surfaces and equipment will comply to EN specifications. Compliance with apartment guidelines shall be noted on drawings. *(PG 2)*

Each internal courtyard has been refined/redesigned for stage 3 to increase communal uses and enjoyment. The private play strategy was reconsidered, and all courtyards will have playful elements; using traditional, sensory, and natural play elements. See Play Strategy and Communal Amenity Spaces for more information

3.4 Central Park
Full construction details of the central park will be required where it is intended to be taken in charge. The park road boundary will be designed to prevent unauthorised vehicular access. The central spine path shall be in natural stone surfacing. The location of a public artwork shall be indicated on the park plan. A perimeter jogging route with outdoor gym stations shall be included in the park design. The park playground , of larger size, shall cater for younger and older children with a suitable division of its space for these age groups. *(PG 2)*

A series of elements prevent unauthorised vehicular access to the open spaces area, See Movement and Permeability Strategy for details.
A location of a public art installation has been chosen in the central park, adjacent to a seating area. The final artwork will be selected with the approval of DCC Parks Department, prior to construction.
The public play area within the central park are multi-age; with a separate MUGA providing a place older children and more active play. See Play Strategy for details of the type of play areas and structures within the design.

3.5 Roof greening
The proposals should include roof greening on at least 70% of all proposed flat or gently sloped roofs. Roof greening and PV panels can co-exist on roofs. A green roof plan should be submitted as part of the landscape proposals. *(PG 2)*

Approximately 41% of roof space are SuDs green roofs. See Landscape Plans and OMP's Architectural Report for more information.

3.7 Biodiversity

2. Tree protection pre-construction, during construction and post-construction in conformity with the Arborist's Report and Landscape Plan;
3. Biodiversity protection pre-construction, during construction and post-construction with regard to nesting birds and bats.

See Arborist's Report and associated drawings for tree protection plan and strategy, as well as the Ecologist Report for existing biodiversity conditions.

5.2.3.Biodiversity

"no biodiversity surveys appear to have been prepared at an earlier stage to inform the design stages of the project" (PG 1)

See Ecologist Report for more information regarding existing site ecology. See Biodiversity and Suds Strategy section for landscape proposal.

"The Environmental Impact Statement from the earlier development (2009) noted the importance of the existing tree-lines for habitat for bats and birds and recommended that: "At least one unbroken tree line should be planted in a north south direction from end of the site to the other, as well as from east to west" (Chapter 8, page 18). There is also an area of connectivity near St. Bricin's Hospital grounds and observed connectivity for bats and birds with the Phoenix Park (EIS 2009)." (PG1)

The planting design includes several continuous treeline, cross the site, creating habitat routes across the site. See Biodiversity and SuDs Strategy for more information.

> "The applicant is requested to demonstrate how connectivity of habitats will be provided through proposed green space and planting both within the site and through to the wider landscape." (PG 1)

See Biodiversity and SuDs Strategy and 1737_PL_P_01.02 *Landscape Masterplan - Soft Landscape Plan* drawing for details on planting mixes and strategies, with emphases on native and variety of the species.

6. Conclusion

This development will have a positive contribution to the area; providing new parks, open green areas, and increase biodiversity. The diversity of spaces for multiple uses and age groups, as well as multiple play areas, will benefit new and existing residents of the surrounding neighbourhood. Overall, the development will fill a gap in the urban fabric, providing high-quality open spaces in a central city location.

Section 1: Appendix 1

Ground Level Landscape Materials Precedents

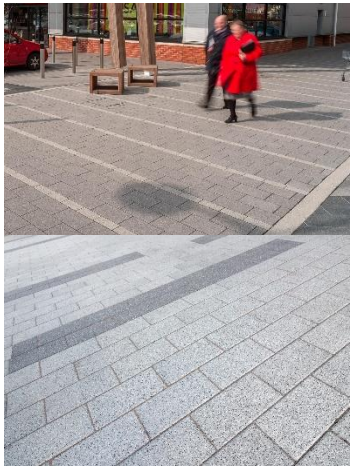
Hardscape Materials

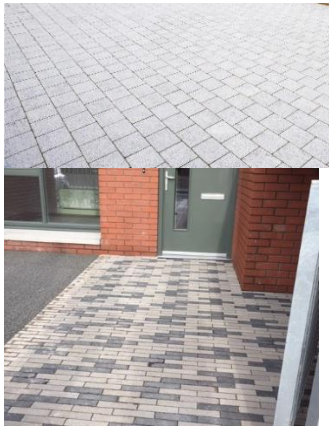
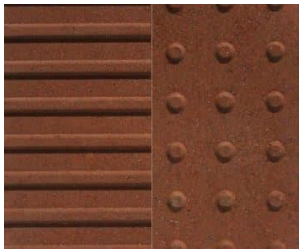
See Hard Landscape Details (Dwg. no. 1737_PL_D_01) for more information

Name	Description	Image reference	Location Description
P1 Concrete Footpaths	Shot blasted finish, non-slip. Detail to be determined by civil engineers		• Footpaths and utility access points
P2 Park/High Pedestrian Traffic Surfacing	Confalt Grouted Macadam or Marshall asphalt, hot rolled with light grey/white graphic chipping. Detail to be determined by civil engineers		• Where the are large expanses of open hardscape (main paths)

Name	Description	Image reference	Location Description
P3 Feature Paving (Entrance and Seating Areas)	PC granite composite block paving or similar, dim. 200x100x80mm and 100x100x80mm mix, colour Silver, Blanc, Mid Grey 60:20:20, Staggered bond pattern, or similar, as approved		• At entrances of apartment blocks and seating areas
P4 Phase 1/Streetscape Integration Paving	Tobermore Tegula paving or similar, dim. 160x160x80mm, colour Bracken with Charcoal accent colour, see plan for detail, Stretcher bond pattern, or similar, as approved		• In the plaza/seating areas adjacent to Stage 1a
P5 Permeable Surface for On-Street Parking	Tobermore Hydropave Pedestel Pavers, dim. 200x100x60mm, colour Natural (Parking Dividers to be Charcoal), Stretcher bond pattern, or similar, as approved.		• Permeable on-street parking spaces

Name	Description	Image reference	Location Description
P6 Shared/Vehicular Parking Entrance Surfacing	Tobermore City Pavers, dim. 300x150x100mm, colour Graphite, Mid-Grey 90:10, Stretcher bond pattern, or similar, as approved		• Roadway of the retail street for character and traffic calming
P7 Main Street Shared Paving	Tobermore City Pavers, dim. 300x150x100mm, colour Graphite with contrasting tactile pavers, Stretcher bond pattern, or similar, as approved		• Roadway of the retail street for character and traffic calming
P8 Northern Park Paving	PC granite composite block paving or similar, dim. 200x100x80mm and 100x100x80mm mix, colour Mid Grey, Noir, Silver 60:20:20, Staggered bond pattern, or similar, as approved		• Distinctive colour and pattern, adding to the character of the space
P9 Pedestrian Park Avenue Paving	PC granite composite block paving or similar, dim. 200x100x80mm and 100x100x80mm mix, colour to be decided, Staggered bond pattern, or similar, as approved		• Distinctive colour and pattern along the main axis through the central park

Name	Description	Image reference	Location Description
P10 Pedestrian Feature Paving	PC granite composite block paving or similar, dim. 200x100x80mm and 100x100x80mm mix, colour to be decided, Staggered bond pattern, or similar, as approved		• Contrasting pavers to distinguish change in uses/transition
P11 Pedestrian Paving Trim	PC granite composite block paving or similar, dim. 200x100x80mm and 100x100x80mm mix, colour to be decided, Staggered bond pattern, or similar, as approved		• Small paving bands along footpaths, providing contrast

Name	Description	Image reference	Location Description
P12 Own Door Access Paving	PC granite composite block paving or similar, Staggered bond pattern, or similar, as approved		• At residential and own door houses, duplexes, and apartments
Tactile Paving	Tactile Flag Pavers (Blister or Warning, depending on location), dim. 400x400x50mm, colour Red or Terracotta, depending on location, or similar, as approved		• At controlled cross and where needed per DMURS
Kerb Cutout	Non-slip, accessible ramp with tactile pavers. Detail to be determined by civil engineers		• For pedestrian access

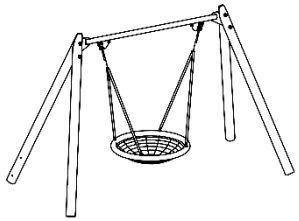
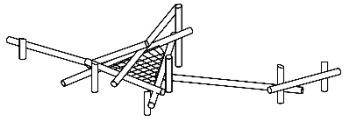
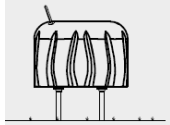
Name	Description	Image reference	Location Description
Kerb	Slipform Concrete Kerb, with expansions joint or similar, as approved Detail to be determined by civil engineers		• Along roadways
Flush Kerb	Flush Concrete Kerb, to allow for emergency access, pedestrian space defended with bollards Detail to be determined by civil engineers		• Where emergency access needed
Main Roadway - 2761sq.m	Marshall asphalt, hot rolled with mid grey graphic chipping. Detail to be determined by civil engineers		• Throughout the proposed development (boulevard and main streets)
Residential Roadway - 1700sq.m	Marshall asphalt, hot rolled with white graphic chipping. Detail to be determined by civil engineers		• In slow traffic areas, important crossing, residential streets, etc
Tabled Intersection/Crossing	Detail to be determined by civil engineers		• See plan, primarily at important crossing

Elements Materials
See Hard Landscape Details (Dwg. no. 1737_PL_D_01) for more information

Name	Description	Image reference	Location Description
Seating	Length 1800mm, width 360mm, height 460mm, powder coated steel divider bar to match legs, fixed to the ground by means of anchoring bolts. 50% to have backrest and armrest, 50% without		• Throughout the proposed development
Seat Wall	Timber bench on concrete retaining wall		• Defining the edge of the central path
Bins	Public Trash Receptacle		• Throughout the proposed development

Name	Description	Image reference	Location Description
Bollards	brushed metal retractable bollards or similar approved		• To control and pervent vechicular access to open spaces
Cycle Stands	Sheffield Cycle Stands 1000mm x 1000mm or similar, as approved		• Throughout the proposed development
Tree Grills	1000mm x 1000mm cast iron, tree grill		• Along the streetscape
MUGA (Multi Use Games Areas)	Approx. 13m x 26m Multi Use Games Area with artificial turf and marking, low wood fencing with lighting incorporated to fence post, ball net and goals at short ends and entrances facing on to the central spine path		• In the center of the central park

Name	Description	Image reference	Location Description
			
Playground Surfacing	Wetpour Safety Surface, or similar approved		• Within structured play areas
Natural Play Elements	Natural Play Elements - mounding, stepping stones, balance logs, vertical logs, as agreed prior to taking in charge		• Throughout the proposed development

Name	Description	Image reference	Location Description
Structured Play Elements	Multi-age Play Elements; equipment each provide different play: balance, swing, climb, and rest. See report for precedents	   	• Within the central park's structural play area and adjacent to the creche

See Boundary Treatment (Dwg. no. 1737_PL_P_03) for more information

Name	Description	Image reference	Location Description
Existing Boundary Treatment to be retained: General	Concrete block wall (typically 2-3m) to be retained and rendered on internal face (site face)		• Throughout the proposed development
Existing Boundary Treatment to be retained: St Bricins Boundary	Proposed adjacent boundary not to be attached to existing wall. Sections of St Brincins wall to be retained prior to any future development within St Brincins (not part of this application).		• Along the eastern boundary
Boundary Wall to match adjacent building facade - 21lm.	2m concrete wall rendered to match adjacent building/integrated into building, see architecture plans for details		• To the rear of the house and duplexs, where needed
Residential Rear Rendered Block Boundary Wall (2m high)	Concrete block wall with concrete coping		• To the rear of the house and duplexs, where needed

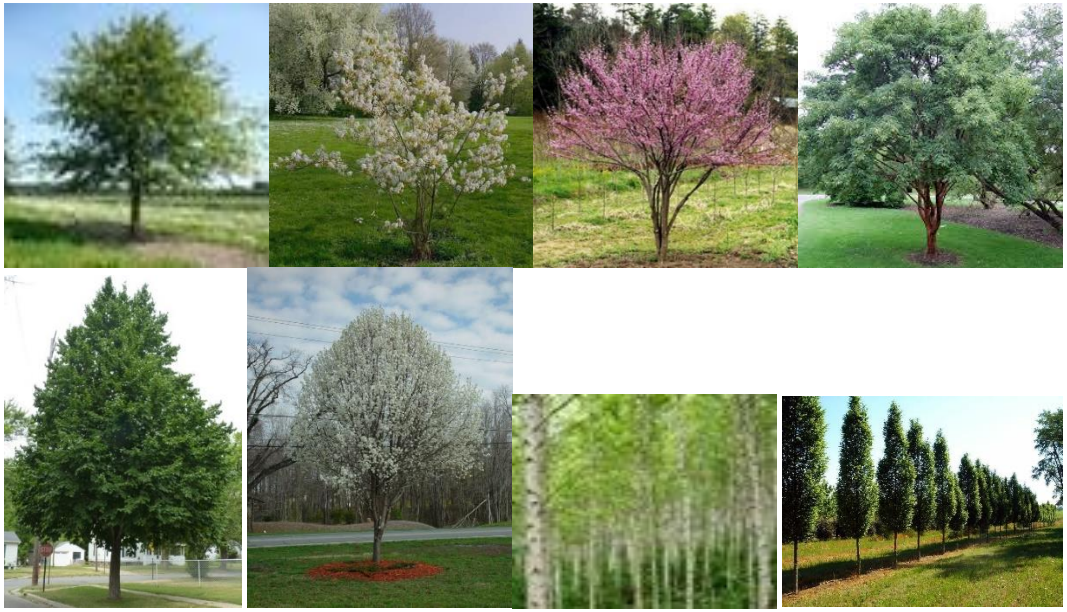
Name	Description	Image reference	Location Description
Residential Front Boundary Wall (1.2m high)	1200mm powder coated estate railing, with entrance gates where indicated		• In the front of house and duplexs
Residential Side Wall (1.8m high)	Timber Fencing with concrete posts		• Seperating the side yards of the house and duplexs
Communal Garden fence: existing fence to be removed	1800mm mesh fence		• Replacing the existing high palaside fence
Communal Amenity Space High Boundary	1800mm powder coated railing, with controlled entrance		• Adjacent to Block 2, with controlled entrance
Public Playground fence	1100mm high bow-top railing to sides with		• Defining the edge of the structured play area in the central park

Name	Description	Image reference	Location Description
	powder coating, double leaf gates		
Private Playground fence	1800mm mesh fence		• Defining the edge of the creches' play areas

See Soft Landscape Details (Dwg. no. 1737_PL_D_02) for more information

Name	Description	Image reference	Location Description
Resin Bound Tree Pit	Permeable Resin Bound Gravel with, SuDs modular soil structure below		• Along the boulevard and where SUDs/permeability is needed in areas that will have high pedestrian use 20-30mm of resin bound gravel consisting of an epoxy resin, on 50mm of hard course. • SuDs modular structure below
Proposed Ground Level Trees	Boulevard Trees: Silver Lime		• Double row along the boulevard
	Central Park Trees: London Plane & Paperbark Maple	 	• Defining the paths and alignments within the central park

Name	Description	Image reference	Location Description
	Northern Park Trees: Common Hazel, Common Alder, & Birch	  	• Throughout the Northern Park

Name	Description	Image reference	Location Description
PL1 Residential Edging Buffer	General Trees: London Plane Silver Lime Upright Hornbeam Common alder Serviceberry Eastern Redbud Paperbark Maple Common Hazel Wild Cherry Birch		• Framing Own-door units entrances
	Arrowwood Guelder Rose Dogwood Ribbon Grass Karl F. Reed Grass Miscanthus Lonicera		

Name	Description	Image reference	Location Description
PL2 Residential Edging Buffer w/ Textured Screening	Arrowwood Guelder Rose Dogwood Ribbon Grass Karl F. Reed Grass Miscanthus Lonicera Stinking hellebore Dogwood	 	• Framing Own-door units' entrances which are in close proximity to more public areas and require additional screening

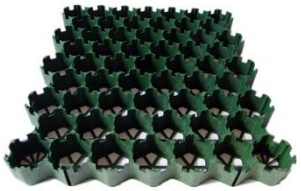
Name	Description	Image reference	Location Description
	Bell heather Alum Root Mugwort Lady Fern Curry plant		
PL3 Undergrowth Planting Shrub	Elder Rosemary Box-leaved Holly Palace Purple Peppermint Lamb's Ear Wormwood Lady Fern Curry plant Hedge veronica		• Low Planting within public areas

Name	Description	Image reference	Location Description
			
PL4 Housing Edging Buffer -xx sq.m.	Astilbe Japonica hybrid St John's wort 'Hidcote' David viburnum English Lavender Dwarf Sweet Box Japanese sedge Rosemary Lonicera		• Planting for front and side yards of houses and duplexes

Name	Description	Image reference	Location Description
PL5 Residential Street Planting Bays	Dogwood Autumn Fern Gold-Edged Plantain Lily 'St. John's wort' French Lavender Snowy Mermaid Chinese fountain grass		• Low planting along residential streets

Name	Description	Image reference	Location Description
		  	
PL6 Structured Edging Planting	Japanese spindle Holly Green Privet		• Structural screen to visually screen undesirable views and to provide privacy for adjacent properties

Name	Description	Image reference	Location Description
			
PL7 Community Garden/Allotment Area Planting	Area to be provided for community garden and/or allotments, area to be temporary planted with ornamental and perennials.		• North of pathway in the northern park, adjacent to existing communal garden
G1 Amenity Grass	Coburn's Low Maintenance seed		• Throughout the proposed development

Name	Description	Image reference	Location Description
G2 Mounded Amenity Grass	Coburn's Low Maintenance seed, Grass Mound - max 1.5m height		• Low mounds define eastern edge of the central park and frame future connection to St Bricins.
G3 Reinforced Grass	Coburn's Low Maintenance seed, Grass Mound		• along emergency vechicular access

Section 2

Arboricultural Impact Assessment

Incorporating a

Tree Protection Strategy

Table of Contents

1. Introduction

The trees and hedgerows were surveyed on the 16th March 2020 by this practice and the findings have been summarised and recorded in the following report. All significant trees and hedgerows have been individually identified and numbers referenced in the Section 7. This report should be read in conjunction with Drawing No. 1737_TS_P_01, which shows the location of trees on the site.

2. Scope

It is proposed to redevelop the site at O'Devaney Gardens for a mixed-use development. The site contains several mature trees and scrub, and this report has been commissioned to provide an arboricultural assessment of the site to assist the design team as they prepare detailed plans for the new development. The purpose of this assessment is to provide an analysis of any potential impact of the proposed development on the existing trees. The report will provide recommendations for preservation and/or removal of tree. It will present a written report on the inspection of the trees. The report will provide a tree protection plan highlighting which trees are to be removed and/or retained

Figure 1. Survey area highlighted in red

This report should be read with reference to the findings summarised and recorded in the Tree and Hedgerow Assessment, Section 7, conducted on 16th March 2020. The report should also be read in conjunction with the following drawings:

1737_TS_P_01	Tree Survey	1:500	A0
1737_TS_P_02	Arboricultural Impact and Tree Protection Plan	1:500	A0
1737_TS_DD_01	Tree Protection Details	1:50	A3

3. Proposed Development

Planning permission is being sought for a mixed-use development consisting of 1,047no. residential units, reg reference 1737_PL_P_01 Landscape Masterplan - Ground Level. Please refer to Figure 2 for general layout of the proposed scheme.

Figure 2. Proposed development layout.

4. Limits of the Assignment

The trees are subject to a visual inspection using non-invasive techniques only. A more detailed inspection can be carried out if requested. This survey has been carried out in support of the planning and design of the new development and only concerns trees on and around the site that are considered relevant to the project.

Every attempt was made to identify hazardous trees in this report however this survey was carried out from the ground and therefore cannot be held to have identified elements of decay which may be hidden out of sight within the crown or beneath ivy or other obstructions. Climbing plants such as Ivy can obscure structural defects and some symptoms of disease, where such plants prevent a thorough examination it is recommended that the climber be cut at ground level and the tree re-inspected when it has died back. It is vital that during tree works any additional defects found by the climbing arborist are communicated to the consulting arborist to allow appropriate action to be taken.

The details within this survey are based on the condition of the trees during the survey period only. The findings in this survey cannot be held to be valid after any site disturbance, man-made or natural, which may have an adverse effect on any trees present. This tree survey contains only the trees and hedgerows within the site and on the boundaries of the proposed development site in detail. The survey methodology and supporting drawings and documentation follow the recommendations contained within BS 5837:2012.

5. Methodology Employed

An initial tree survey and visual condition assessment was on the 13th March 2020. For the purpose of this report and in accordance with BS 5837: 2012 Trees in relation to design, demolition and construction. Recommendations only trees with diameters of 75mm or greater were surveyed, also in accordance with section 4.4.2.3 of the British standard document where trees formed obvious groups these were assessed and recorded as groups. The survey commenced along the southern boundary and continued in a westerly direction.

Section 4.4.2.3 of BS 5837: 2012 states:

Trees growing as groups or woodland should be identified and assessed as such where the arboriculturist determines that this is appropriate. However, an assessment of individuals within any group should still be undertaken if there is a need to differentiate between them, e.g. in order to highlight significant variation in attributes (including physiological or structural condition).

NOTE: The term "group" is intended to identify trees that form cohesive arboricultural features either aerodynamically (e.g. trees that provide companion shelter), visually (e.g. avenues or screens) or culturally, including for biodiversity (e.g. parkland or wood pasture), in respect of each of the three subcategories.

The survey concentrated primarily on the significant trees located within the development area. The objective of this survey was to gather information regarding the tree's location on the proposed development site and the impact the proposed development may have on the trees. Please refer to appendix 1 for the tree inventory. Significant trees can be equated as those trees whose visual importance to the surrounding area is enough to justify special efforts to protect/preserve and whose loss would have an irremediable adverse impact on the local environment. Significance can also be placed depending on the trees age, another variable to imply significance can be the aesthetic merit of the tree based on its unusual size, intrinsic physical features or outstanding appearance or occurring in a unique location or context, and thus provides a special contribution as a landmark or landscape feature.

Tree diameters (DBH) were estimated at 1.5 meter above grade as per standard arboricultural practice. Tree height was measured with the use of a clinometer (Where practical). A generalized system was employed to describe the overall health of the trees. The system uses a five-tier rating scale with the following descriptors:

Specimen condition 5-tier rating system
Very poor-1-20%
Poor- 21-40%
Fair- 41-60%
Good- 61-80%
Very good 81-100%

6. General Description of Trees and Hedgerows

The proposed 5.2 Ha site is located in a mature residential location in Stoneybatter. at former O'Devaney Gardens Site, Dublin 7. The site is currently a brownfield with very little vegetation. Most of the mature vegetation is within the St Bricin's buffer area, along with some on the northern boundary.

The eastern boundary has a staggered double row of mature Alder (*Alnus cordata*) which includes 1no. Sycamore (*Acer pseudoplatanus*). These trees were planted to serve as screening into a site that buffers the grounds of St Bricin's Military Hospital, many of which have suffered severe damaged due to anti-social behaviour. This buffer area also contains trees under the minimum standard diameter to be surveyed. All trees in the area will need to be removed to facilitate the development.

The northern boundary has a group of mature Elm (*Ulmus glabra)* trees which were not tagged during the survey due to inaccessibility and proximity to residential homes. The trees are located on disputed land, some of which is used for a community garden. This group shall be retained except for those located within 2m of proposed property lines. Exact location of noted trees to be confirmed.

7. The Tree Survey

Category for Tree quality assessment	Number of trees
A	0
B	42
C	9
U	1

Table 1. Category of the Trees surveyed (BS 5837:2012, Item 4.5 Tree categorization method)

Of the 46 trees to be removed to accommodate the proposed design, these consist of 36 no. category B; 9 no. category C trees, and 1 no. category U trees. In accordance with BS 5837: 2012 Trees in relation to design, demolition and construction recommendations, category B signifies those trees of a "*moderate value and in such a condition as to be able to make a substantial contribution* (A minimum life expectancy of 20 yrs is suggested). Category C signifies those trees/hedgerows of "*a low quality and value that are currently in an adequate condition to remain until new planting could be established* (A minimum life expectancy of 10yrs is suggested)."

Tree #	Species	Age Class	Tree Category
0582	*Alnus cordata* Alder	Mature	B1
0583	*Alnus cordata* Alder	Mature	B1
0584	*Alnus cordata* Alder	Mature	B1
0585	*Acer pseudoplatanus* Sycamore	Mature	U
0586	*Alnus cordata* Alder	Mature	C2
0587	*Alnus cordata* Alder	Mature	B1
0588	*Alnus cordata* Alder	Mature	C2
0589	*Alnus cordata* Alder	Mature	B1
0590	*Alnus cordata* Alder	Mature	B1
0591	*Alnus cordata* Alder	Mature	B1
0592	*Alnus cordata* Alder	Mature	B1
0593	*Alnus cordata* Alder	Mature	B1
0594	*Alnus cordata* Alder	Mature	B1
0595	*Alnus cordata* Alder	Mature	B1
0596	*Alnus cordata* Alder	Mature	B1
0597	*Alnus cordata* Alder	Mature	B1
0598	*Alnus cordata* Alder	Mature	B1
0599	*Alnus cordata* Alder	Mature	B1
0600	*Alnus cordata* Alder	Mature	B1
0601	*Alnus cordata* Alder	Mature	B1
0602	*Alnus cordata* Alder	Mature	B1
0603	*Alnus cordata* Alder	Mature	B1
0604	*Alnus cordata* Alder	Mature	B1
0605	*Alnus cordata* Alder	Mature	C2
0606	*Alnus cordata* Alder	Mature	B1
0607	*Alnus cordata* Alder	Mature	B1
0608	*Alnus cordata* Alder	Mature	B1
0609	*Alnus cordata* Alder	Mature	B1
0610	*Alnus cordata* Alder	Mature	B1
0611	*Alnus cordata* Alder	Mature	B1
0612	*Alnus cordata* Alder	Mature	B1
0613	*Alnus cordata* Alder	Mature	B1
0614	*Alnus cordata* Alder	Mature	B1
0615	*Alnus cordata* Alder	Mature	C2
0616	*Alnus cordata* Alder	Mature	B1
0617	*Alnus cordata* Alder	Mature	C2
0618	*Alnus cordata* Alder	Mature	B1
0619	*Alnus cordata* Alder	Mature	B1
0620	*Alnus cordata* Alder	Mature	C2
0621	*Alnus cordata* Alder	Mature	B1
0622	*Alnus cordata* Alder	Mature	B1

Tree #	Species	Age Class	Tree Category
0623	*Alnus cordata* Alder	Mature	C2
0624	*Alnus cordata* Alder	Mature	C2
0625	*Alnus cordata* Alder	Mature	B1
0626	*Alnus cordata* Alder	Mature	B1
0627	*Alnus cordata* Alder	Mature	C2
Group 1 (6 trees)	*Ulmus glabra* Elm	Mature	B1/B2/B3

Table 2: Schedule of trees to be removed (To be read in conjunction with Appendix1)

Total trees removed= 46

It is not considered that the loss of identified trees will be significant in landscape terms as none are of major significance in terms of their arboricultural/historic values. There will be extensive planting as part of the landscape proposals within the development. There are a proposed 250+ no. new trees planted within the open spaces and along the boundaries. These are specified as native tree species.

8. Tree Removal

Description of Trees for Removal

The trees to be removed to facilitate the development include the eastern boundary of Alder (*Alnus cordata*) / Sycamore (*Acer pseudoplatanus*). 1no. tree is to be removed based on its condition.

NOTE: The northern boundary of mature Elm (*Ulmus glabra)*is scheduled for retention, except for those located within 2m of proposed property lines.

Figure 3 – Arboricultural Impact and Tree Protection Plan
(refer to Drawing **1737_TS_P_02**);

All trees that are destined for removal shall be removed prior to any construction or demolition works on this site. Any tree remedial works that are required shall also be undertaken prior to any construction or demolition activity on the site. All the above shall be carried out by qualified and insured tree surgeons and in accordance with BS 3998:2010 Tree works Recommendations.

Prior to any construction or demolition works on this site all trees destined for retention need to be protected by the use of protective barriers and or ground protection, fit for the purpose of ensuring the successful long-term preservation of the trees. In order for the retained trees to be adequately protected on the site a construction exclusion zone needs to be identified. This zone is calculated based on the root protection area (RPA), which is the minimum area in m2 which should be left undisturbed around each retained tree. The RPA should be calculated as an area equivalent to a circle with a radius 12 times the stem diameter for a single stem tree and 10 times basal diameter measured immediately above the root flare for trees with more than one stem arising below 1.5m above ground level.

Number of Stems	**Calculation**
Single Stem Tree	$RPA\ (m^2) = \{ \frac{\text{stem diameter (mm) @ 1.5m x 12}}{1000} \}^2 \times 3.142$
Tree with more than one Stem arising below 1.5m above Ground level	$RPA\ (m^2) = \{ \frac{\text{Basal Dia. (mm) x 10}}{1000} \}^2 \times 3.142$

NoteL The Calculated RPA should be capped at 707m2 e.g. which is the equivalent to a circle with a radius of 15m or a square with approximately 26m sides.

Conclusions

The existing trees provide a partial screening of the site and are generally mature and in good to fair condition, with a number of low-quality mature trees. The trees are not of major significance in terms of their historical or arboricultural values, offering low to moderate amenity value. While some existing trees require general tidying works to improve their appearance, most trees are to be removed and replaced by species that offer greater biodiversity and aesthetic appeal.

9. Relevant Legislation

There are no Tree Protection Orders (TPOs) on any of the trees on this site however under Section 37 of the Forestry Act, 1946, it is illegal to uproot any tree over ten years old or to cut down any tree of any age (including trees which form part of a hedgerow), unless a Felling Notice has been lodged at the Garda Station nearest to the trees at least 21 days before felling commences.

The requirement for a felling licence for the uprooting or cutting down of trees does not apply where:

1. The tree in question is a hazel, apple, plum, damson, pear, or cherry tree grown for the value of its fruit or any ozier;(Willow)
2. The tree in question is less than 100 feet from a dwelling other than a wall or temporary structure;
3. The tree in question is standing in a County or other Borough or an urban district (that is, within the boundaries of a town council, or city council area).
4. The tree is considered dangerous and hazardous.

Other exceptions apply in the case of local authority road construction, road safety and electricity supply operations.

The Act is administered by the Forest Service (Department of Agriculture, Fisheries and Food). The Felling Section of the Forest Service is based in Johnstown Castle, Co. Wexford (053-9160200 or 1890-200223).

If you have any queries about felling in general or are unsure whether or not the trees fall under any of the above cases, it is recommended that you seek the advice of the Felling Section or of your local forestry development officer for further information.

Trees may contain bats. Bats are protected under Schedule 5 of the Wildlife Act 1976 and Schedule 1 of the European Communities (Natural Habitats) Regulations 1997. Professional advice from a licenced surveyor should be sought prior to any works commencing on trees.

10. Protected Tree Zone/Construction Exclusion Zone

Trees that are destined to be retained must be protected by barriers, signage and/or ground protection prior to any materials or machinery being brought on site and prior to any development, demolition or soil stripping takes place. Areas that are designated for new plantings should be similarly protected.

Barriers should be fit for the purpose of excluding construction activity. The tree protection zone shall be set out as (figure 4) per drawing no. **1737_TS_DD_01**.

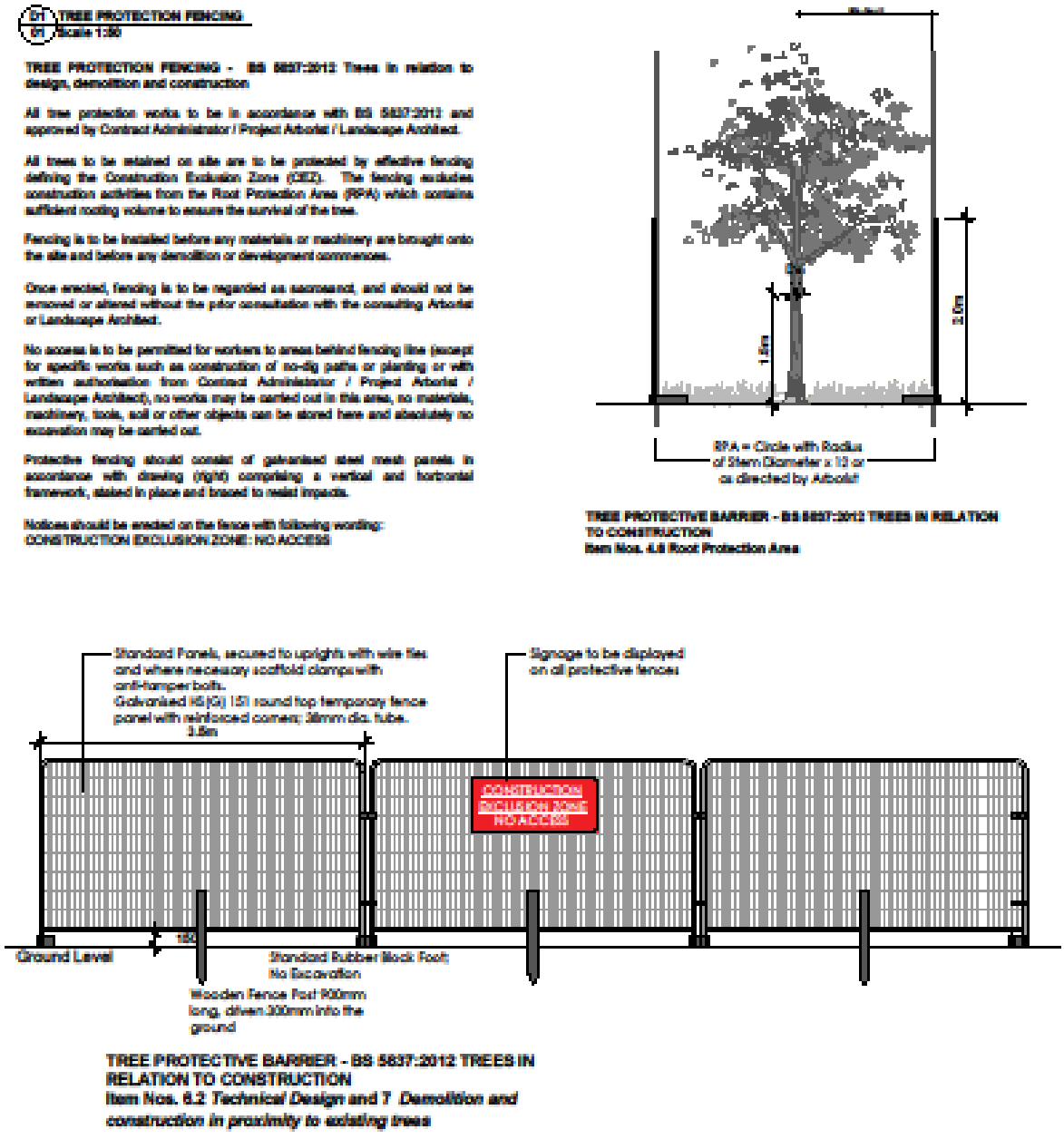


Figure 4 : Construction Fencing Detail

A notice 'Construction Exclusion Zone' shall be placed on tree protection fencing at regular intervals along the protective fencing. This notice shall include contact details for the Site Arborist. The noticed should say 'Strictly no access should be permitted to the R.P.A. unless instructed by the Site Arborist.', 'No materials of any kind are to be stored within the R.P.A.', 'No "Spilling out" of materials shall take place within the R.P.A.' and, 'No fires are to be lit within the R.P.A.'.

The Contractor is to maintain the protective fencing in good condition to the satisfaction of the Site Arborist for the duration of the contract. Any damage to fencing is to be reported to the Site Arborist immediately. Damaged fencing is to be repaired within 2 hours of the damage occurring. All works within the vicinity of the damaged fencing are to be suspended until the fencing is repaired.

11. Ground Protection

Although works within the RPA are not recommended should essential works be required within the RPA. The installation of ground protection in the form of a single thickness of scaffold boards on top of a compressible layer laid onto a geotextile may be acceptable. For wheeled or tracked movements within the R.P.A. the ground protection should be designed by an engineer to accommodate the likely loading. Any works within the RPA must be undertaken with prior consultation with the arborist.

12. Arboricultural Method Statement/Tree Protection Strategy

The object of this arboricultural method statement/tree protection plan is to provide information for the building contractor/site manager on how the trees or hedgerows on the site need to be protected pre, during and post development works so that they can prepare their own site specific detailed method statement for their works

It is necessary for the protective fencing to be erected and all other mitigation measures required to be put in place prior to any development works commencing on site to ensure all retained trees and their critical rooting zone are protected for the duration of the works. Refer to tree protection details (1737_TS_DD_01) for the position of protective fencing and additional mitigation measures

The protection for trees and hedgerows shown for retention will occur in three stages known as pre, during and post development.

Arboricultural Method Statement/Tree Protection Strategy – Management Stages		
Stage 1 – Pre development works	**Stage 2 - The construction works stage**	**Stage 3-Post Development Works**
1. Consultation with Arborist and developer	1. Protective Fencing – management and maintenance	1. Site inspection by arborist to ensure plan adhered to and trees protected
2. Site meeting - consultation with Arborist, developer, main contractor and sub-contractor	2. Excavations – works only commence when protective fencing in place	
3. Tree works – Appointment of professional tree surgeon	3. Working within the RPA – All works within the RPA to be discussed and agreed with the arborist	
4. Erection of protective fencing/Mitigation measures	4. Finished ground levels/Landscaping – All works to ensure the integrity of tree/s Protected.	

Table 3. Arboricultural Method Statement/Tree Protection Strategy – Management Stages

12.1 Stage 1 - Pre-Development Work

Prior to works commencing on site the following needs to be agreed and implemented

Appointment of an arborist (Site Arborist) to oversee all works relevant to trees;

Establishment of tree protection (refer to Drawing **1737_TS_P_02** & **1737_TS_DD_01**);

Monitoring of tree protection (adherence to the Tree Protection Code of Practice);

Supervision of works in the vicinity of trees;

Post construction re-assessment of retained trees

Site meeting

Prior to any works on site, it is necessary that a meeting be arranged between the project manager, site foreman, the project landscape architect, the project arborist and the local authority to identify and finalize the trees for removal and the line of protective fencing and any other mitigation measures.

Tree works

The Contractor shall take all precautions to ensure that any trees which are not required to be taken down under the contract shall remain undisturbed and undamaged. The Contractor must appoint a qualified arboricultural contractor to undertake all tree works subject to approval by the Consulting Arborist. The Contractor shall undertake no works to trees unless

instructed by the Contract Administrator. Five working days' notice of intention to undertake works to be given.

The works are to be undertaken in accordance with BS 3998 2010.

Erection of protective fencing/Mitigation measures

The erection of protective fencing is to be erected to the fence line shown in tree protection plan. The fencing must adhere with BS 5837: 2012 (Figure 4 above). Signage must be placed on the fence to highlight its importance. Once the fencing is erected works can commence on-site.

12.2 Stage 2 - The Construction Works Stage

Protective Fencing

During the course of the construction works the integrity of the fencing must be respected and remain in place at all times. No building materials or soil heaps are to be stored within this area. Should essential works need to take place with the root protection area the project arborist must be informed in advance and any mitigation measures are to be put in place. The protective fencing must remain in situ for the duration of the project and must only be removed upon completion of all works.

Excavations

Excavation works are only to commence once the protective fence line is in place. The excavations need to be viewed on site once marked out with the project manager, site foreman and the project arborist in advanced of excavation to determine the extent of the impact and the works space required to allow the construction works proceed and to assess any additional mitigation measures that may be required to protect the retained trees. In certain areas it may be necessary to use alternative methods of excavation to prevent encroachment into the RPA of the trees to be retained and this may include such methods as retaining walls, no dig technique etc.

Working within the RPA

The Site Arborist should be given 5 days' notice of any works within or access required to this zone.

All works must be carried out manually root pruning is to be undertaken by an arborist using handheld equipment such as a handsaw. For pedestrian movements within the R.P.A. the installation of ground protection in the form of a single thickness of scaffold boards on top of a compressible layer laid onto a geotextile may be acceptable. For wheeled or tracked

movements within the R.P.A. the ground protection should be designed by an engineer to accommodate the likely loading.

Finished ground levels/Landscaping

Trees that are to be retained should be protected so that soil disturbance and changes in soil levels do not occur. The construction exclusion zone surrounding a tree should contain sufficient rooting volume to ensure the survival of the tree. The location and erection of protective fences is as specified in accordance with BS 5837:2012 ''Trees in relation to Construction'' and on the drawings (see drawing no. **1737_TS_DD_01**).Where changes in level occurs, these are to be either graded into the finished levels starting outside the RPA or alternatively, retaining wall structures are to be used differentiating between the different levels. All finished surfaces are to be porous to allow the free movement of water and gaseous exchange to the roots.

Where hard surfaces are proposed within the Root Protection Area (RPA) a strict no dig design excavation must be adhered to, avoiding unnecessary root loss. In the event where excavation is essential a hand dig system must be undertaken under arborist supervision. The hard surface must be permeable to allow the roots moisture infiltration and gaseous diffusion. Structurally, the hard surface should be designed to avoid localised compaction, by evenly distributing the carried weight. The sub-base will consist of a three-dimensional cellular confinement system with the build up to the engineer's detail and approved by the arborist.

All operations to be in accordance with BS 5837:2012 Trees in relation to design, demolition and construction -Recommendations.

12.3 Stage 3 - Post Development Works

The project is not to be considered complete until the arborist has inspected the site and is satisfied that all retained trees have been protected in accordance with the site specific Tree Protection Plan and there has been no negative impact on the retained trees on site as a result of the development.

13. Conclusion

A complete tree inventory has been provided in appendix 1. This outlines the schedule of trees on site in accordance with BS 5837: 2012 Trees in relation to design, demolition and construction. Recommendations.

The Arboricultural impact of the proposed design is moderate and will involve the removal of 44no. mature Alder (*Alnus cordata*); while some are in good condition, they are no longer appropriate for the site. 1no. dead Sycamore (*Acer pseudoplatanus*) which is in category U in accordance to BS 5837 trees of low quality, will also be removed. The group of 6no. mature Elm (*Ulmus glabra*) are to be retained along the northern boundary.

A comprehensive landscape plan will be incorporated for the development which will ensure that site-appropriate trees are planted to replace the removed trees and to ensure that the arboreal footprint of the site is maintained.

14. Tree Survey Key

Date of Survey:16th March 2020 **Location:**O'Devaney Gardens,,Stoneybatter

Reference to tree numbers on plan: Trees have metal tags attached and these correspond with the numbers in this report.

Reference to Tree Species: Trees species are identified and logged in both the Latin botanical name and common name in English.

Reference to height: Refers to height of tree measured in meters.

Reference to stem diameter: Refers to stem diameter measured in millimetres at 1.50m above adjacent ground level (on sloping ground to be taken on the upslope side of the tree base) or immediately above the root flare for multi-stemmed trees

Reference to branch spread: Refers to branch spread in meters taken at the four cardinal points, north, south, east and west to derive an accurate representation of the crown

Reference to height of crown clearance: Refers to height of crown clearance is the height in meters of crown clearance above adjacent ground level

Reference to age / class is as follows:

Young: A tree, which has been planted in the last 10 years or is less than 1/3 expected height of the species in question.

Semi-Mature: A tree, which is between a 1/3 and 2/3's the expected height of the species in question.

Mature: A tree that has reached the expected height of the species in question, but still increasing in size.

Over Mature: A tree at the end of its life cycle and the crown is starting to break up and decrease in size.

Veteran: A tree showing features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.

Reference to Physiological Condition is as follows:

Good: A full healthy crown and trunk, but possibly including some suppressed, physically damaged branches or other small defects.

Fair: Canopy slightly sparse when in leaf; some minor or isolated major deadwood and some defects such as bark wounds or included bark.

Poor: A tree with more serious sparse leaf cover, extensive deadwood or defective to the point of being dangerous.

Dead: A tree that is dead or is showing signs of significant, immediate and irreversible overall decline.

Reference to Structural Condition: Refers to the general condition of a tree, e.g. tree collapsing, the presence of any decay or physical defect, etc.

Reference to Preliminary Management Recommendations: Refers to preliminary management recommendations e.g. further investigation of suspected defects that require more detailed assessment or potential for wildlife habitat, etc.

Reference to Estimated Remaining Contribution: Refers to estimated remaining contribution in years e.g. less than 10, 10-20, 20-40, more than 40.

Reference to Tree Categorization is as follows (BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations):

Category A (Green) Trees of high quality and value: in such condition as to be able to make a substantial contribution (a minimum of 40 years is suggested).

Sub categories

- Mainly Arboricultural values – Trees that are particularly good examples of their species, especially if rare or unusual, or essential components of groups, or informal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue);
- Mainly landscape values – Trees, groups or woodland which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance e.g. avenues or other arboricultural features assessed as groups);
- Mainly cultural values, including conservation – Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood pasture).

Category B (Blue) Trees of moderate quality and value: those in such a condition as to make a significant contribution (a minimum of 20 years is suggested).

Sub categories

- Mainly Arboricultural values – Trees that might be included in the high category, but are downgraded because of slightly impaired condition e.g. presence of redeemable defects including unsympathetic past management and minor storm damage);
- Mainly landscape values – Trees present in numbers, usually as groups or woodlands, such that they form distinct landscape features, thereby attracting a higher collective rating than they might as individuals but which are not, individually, essential components of formal or semi-formal arboricultural features (e.g. trees of moderate quality within an avenue that includes better, A category specimens), or trees situated

mainly internally to the site, therefore individually having little visual impact on the wider locality;

- Mainly cultural values, including conservation – Trees with clearly identifiable conservation or other cultural benefits.

Category C (Grey) Trees of low quality and value: currently in adequate condition to remain until new planting could be established (a minimum of 10 years is suggested) or young trees with a stem diameter below 150mm.

Sub categories

- Mainly Arboricultural values – Trees not qualifying in higher categories;
- Mainly landscape values – Trees present in groups or woodlands, but without this conferring on them a greater landscape value, and/or trees offering little or no screening benefit;
- Mainly cultural values, including conservation – Trees with very limited conservation or other cultural benefits.

Category U (Red) Trees in such a condition that any existing value would be lost within 10 years and which should, in the current context be removed for reasons of sound arboricultural management.

Sub categories

- Trees that have a serious, irremediable, structural defect, such that their loss is expected due to collapse including those that will become unviable after removal of other R category trees (i.e. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning)
- Trees that are dead or are showing signs of significant, immediate and irreversible overall decline.
- Trees infected with pathogens of significance to the health and/or safety of other trees nearby (Dutch elm disease) or very low quality trees suppressing adjacent trees of better quality.

Reference to Root Protection Area: The Root Protection Area (RPA) is the minimum area around individual trees to be protected from disturbance during construction works; RPA is recorded as a radius (rad) in metres measured from the tree stem and is shown on the tree survey drawing as a circle with the tree stem in the centre. For single stem trees, the root protection area (RPA) should be calculated as an area equivalent to a circle with a radius 12 times the stem diameter, to a maximum of 15m. For trees with more than one stem, one of the two calculation methods below should be used.

The calculated RPA for each tree should be capped to 707 m2.

For trees with two to five stems, the combined stem diameter should be calculated as follows: √ ((stem diameter 1)2 + (stem diameter 2)2 ... + (stem diameter 5)2)

For trees with more than five stems, the combined stem diameter should be calculated as follows: √ ((mean stem diameter)2 × number of stems)

15. Section 2: Appendix 1: Tree Inventory

Tree #	Species Botanical name	Age Class	Gt. (mm)	Ht. (m)	CrownSp. (m)	Crown Cl. (m)	Condition	Structural/ Physiological Observations & PMR	Impact of development	Remedial works	Category	R.P.A. (m) radius
0582	*Alnus cordata* Alder	M	1300	10.1	3.5	2	Good	A large mature Alder located on the south eastern boundary of the site	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0583	*Alnus cordata* Alder	M	1000	10	3.5	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0584	*Alnus cordata* Alder	M	1100	9.5	5.6	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0585	*Acer pseudoplatanus* Sycamore	M	230	6	N=2 S=2 E=2 W=2	2	Dead	A large mature Sycamore	Remove due to its poor condition	Remove, replace with site appropriate trees	U	TBR

Tree #	Species Botanical name	Age Class	Gt. (mm)	Ht. (m)	Crown Sp. (m)	Crown Cl. (m)	Condition	Structural/ Physiological Observations & PMR	Impact of development	Remedial works	Category	R.P.A. (m) radius
0586	*Alnus cordata* Alder	M	850	9	5	2	Poor	A large mature Alder with severe fire damage to the base.	Remove to facilitate the development	Remove, replace with site appropriate trees	C3	TBR
0587	*Alnus cordata* Alder	M	1000	11	6	2	Good	Heavily suppressed by ivy	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0588	*Alnus cordata* Alder	M	1100	11	5	2	Poor	A large mature Alder with severe fire damage to the base.	Remove to facilitate the development	Remove, replace with site appropriate trees	C3	TBR
0589	*Alnus cordata* Alder	M	1060	10.5	3.5	2	Good	A large mature Alder heavily suppressed by ivy	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR

Tree #	Species Botanical name	Age Class	Gt. (mm)	Ht. (m)	Crown Sp. (m)	Crown Cl. (m)	Condition	Structural/ Physiological Observations & PMR	Impact of development	Remedial works	Category	R.P.A. (m) radius
0590	*Alnus cordata* Alder	M	1400	10.5	5.5	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0591	*Alnus cordata* Alder	M	1150	10.5	6	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0592	*Alnus cordata* Alder	M	1200	10	6.5	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR

Tree #	Species Botanical name	Age Class	Gt. (mm)	Ht. (m)	Crown Sp. (m)	Crown Cl. (m)	Condition	Structural/ Physiological Observations & PMR	Impact of development	Remedial works	Category	R.P.A. (m) radius
0593	*Alnus cordata* Alder	M	1250	10	7	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0594	*Alnus cordata* Alder	M	1350	10.5	6 (NW 5.5)	2	Good	A large codominant mature Alder, forked at base and heavily suppressed by ivy	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0595	*Alnus cordata* Alder	M	800	10	4.5 (NE 3.5)	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR

Tree #	Species Botanical name	Age Class	Gt. (mm)	Ht. (m)	Crown Sp. (m)	Crown Cl. (m)	Condition	Structural/ Physiological Observations & PMR	Impact of development	Remedial works	Category	R.P.A. (m) radius
0596	*Alnus cordata* Alder	M	850	10	6	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0597	*Alnus cordata* Alder	M	1150	10	7 (W 1.5) (E5.5)	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0598	*Alnus cordata* Alder	M	1100	10	4 (W 2) (E 2)	2	Good	A large mature Alder suppressed by ivy	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0599	*Alnus cordata* Alder	M	950	10	4.5 (W 1.5) (E 3)	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR

Tree #	Species Botanical name	Age Class	Gt. (mm)	Ht. (m)	Crown Sp. (m)	Crown Cl. (m)	Condition	Structural/ Physiological Observations & PMR	Impact of development	Remedial works	Category	R.P.A. (m) radius
0600	*Alnus cordata* Alder	M	1200	10.5	4.5 (W 1.5) (E 3)	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0601	*Alnus cordata* Alder	M	1400	10	7.5 (W 3) (E 4.5)	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0602	*Alnus cordata* Alder	M	900	10.5	4 (W 2) (E 2)	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR

Tree #	Species Botanical name	Age Class	Gt. (mm)	Ht. (m)	Crown Sp. (m)	Crown Cl. (m)	Condition	Structural/ Physiological Observations & PMR	Impact of development	Remedial works	Category	R.P.A. (m) radius
0603	*Alnus cordata* Alder	M	1200	10.5	7.5 (W 3.5) (E 4)	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0604	*Alnus cordata* Alder	M	1200	13	6 (W 3) (E 3)	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0605	*Alnus cordata* Alder	M	950	15	5.5 (W 2) (E 3.5)	2	Poor	A large mature Alder with severe cavity rot on lower trunk	Remove to facilitate the development	Remove, replace with site appropriate trees	C3	TBR

Tree #	Species Botanical name	Age Class	Gt. (mm)	Ht. (m)	Crown Sp. (m)	Crown Cl. (m)	Condition	Structural/ Physiological Observations & PMR	Impact of development	Remedial works	Category	R.P.A. (m) radius
0606	*Alnus cordata* Alder	M	1200	15	6 (W 3) (E 3)	2	Fair-Good	A large mature Alder with cavity rot on lower trunk	Remove to facilitate the development	Remove, replace with site appropriate trees	B3	TBR
0607	*Alnus cordata* Alder	M	1150	15	6.5 (W 3) (E 3.5)	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0608	*Alnus cordata* Alder	M	800	15	6 (W 3) (E 3)	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B3	TBR

Tree #	Species Botanical name	Age Class	Gt. (mm)	Ht. (m)	Crown Sp. (m)	Crown Cl. (m)	Condition	Structural/ Physiological Observations & PMR	Impact of development	Remedial works	Category	R.P.A. (m) radius
0609	*Alnus cordata* Alder	M	1350	15	8 (W 2.5) (E 5.5)	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0610	*Alnus cordata* Alder	M	1350	15	7.5 (W 3.5) (E 4)	2	Good	A large mature Alder heavily suppressed by ivy	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0611	*Alnus cordata* Alder	M	1500	17	7 (W 2.5) (E 4.5)	2	Good	A large mature Alder heavily suppressed by ivy	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR

Tree #	Species Botanical name	Age Class	Gt. (mm)	Ht. (m)	Crown Sp. (m)	Crown Cl. (m)	Condition	Structural/ Physiological Observations & PMR	Impact of development	Remedial works	Category	R.P.A. (m) radius
0612	*Alnus cordata* Alder	M	1050	15	6 (W 3) (E 3)	2	Good	A large mature Alder heavily suppressed by ivy	Remove to facilitate the development	Remove, replace with site appropriate trees	B3	TBR
0613	*Alnus cordata* Alder	M	1100	17	7 (W 3) (E 4)	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0614	*Alnus cordata* Alder	M	1200	17	7 (W 3.5) (E 3.5)	2	Good	A large mature Alder heavily suppressed by ivy	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR

Tree #	Species Botanical name	Age Class	Gt. (mm)	Ht. (m)	Crown Sp. (m)	Crown Cl. (m)	Condition	Structural/ Physiological Observations & PMR	Impact of development	Remedial works	Category	R.P.A. (m) radius
0615	*Alnus cordata* Alder	M	900	13	6 (W 2) (E 4)	2	Poor-Fair	A large codominant mature Alder damaged	Remove to facilitate the development	Remove, replace with site appropriate trees	C2	TBR
0616	*Alnus cordata* Alder	M	1200	13	8 (W 3.5) (E 4.5)	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0617	*Alnus cordata* Alder	M	1000	14	6 (W 2) (E 4)	2	Poor	A large mature Alder with damage to face	Remove to facilitate the development	Remove, replace with site appropriate trees	C3	TBR

Tree #	Species Botanical name	Age Class	Gt. (mm)	Ht. (m)	Crown Sp. (m)	Crown Cl. (m)	Condition	Structural/ Physiological Observations & PMR	Impact of development	Remedial works	Category	R.P.A. (m) radius
0618	*Alnus cordata* Alder	M	1400	17	6 (W 3) (E 3)	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B1	TBR
0619	*Alnus cordata* Alder	M	1200	16	6.5 (W 2) (E 4.5)	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0620	*Alnus cordata* Alder	M	1300	15	6 (W 3) (E 3)	2	Poor	A large mature Alder with fire damage to lower trunk	Remove to facilitate the development	Remove, replace with site appropriate trees	C3	TBR

Tree #	Species Botanical name	Age Class	Gt. (mm)	Ht. (m)	Crown Sp. (m)	Crown Cl. (m)	Condition	Structural/ Physiological Observations & PMR	Impact of development	Remedial works	Category	R.P.A. (m) radius
0621	*Alnus cordata* Alder	M	1300	15	7 (W 3) (E 4)	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0622	*Alnus cordata* Alder	M	1100	15	8 (W 2) (E 6)	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0623	*Alnus cordata* Alder	M	1200	10.7	6 (W 3) (E 3)	2	Poor	A large mature Alder with decay and damage to lower trunk	Remove to facilitate the development	Remove, replace with site appropriate trees	C3	TBR

Tree #	Species Botanical name	Age Class	Gt. (mm)	Ht. (m)	Crown Sp. (m)	Crown Cl. (m)	Condition	Structural/ Physiological Observations & PMR	Impact of development	Remedial works	Category	R.P.A. (m) radius
0624	*Alnus cordata* Alder	M	1000	10.5	8 (W 2) (E 6)	2	Poor	A large mature Alder with fire damage to base, but still showing signs of health	Remove to facilitate the development	Remove, replace with site appropriate trees	C3	TBR
0625	*Alnus cordata* Alder	M	1200	13.5	6 (W 3) (E 3)	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR
0626	*Alnus cordata* Alder	M	1150	13.5	6 (W 3) (E 3)	2	Good	A large mature Alder	Remove to facilitate the development	Remove, replace with site appropriate trees	B2	TBR

Tree #	Species Botanical name	Age Class	Gt. (mm)	Ht. (m)	Crown Sp. (m)	Crown Cl. (m)	Condition	Structural/ Physiological Observations & PMR	Impact of development	Remedial works	Category	R.P.A. (m) radius
0627	*Alnus cordata* Alder	M	1100	13.5	8.5 (W 4) (E 4.5)	2	Good	A large mature Alder with severe fire damage to base of trunk	Remove to facilitate the development	Remove, replace with site appropriate trees	C3	TBR
Group 1 (6 trees)	*Ulmus glabra* Elm	M	-	-	-	-	Good	A group of large mature Elm located on disputed land.	Retained except for those located within 2m of proposed property lines.	Confirm RPA with proposed development.	B1/B2/B3	4.2-5.3m

16. Disclaimers

This report is intended solely for the benefit of the parties to whom it is addressed, and no responsibility is extended to any third party for the whole or any part of its contents. The conclusions and recommendations in this report are only valid for a period of one year. This period of validity may be reduced in the case of any change in conditions to or in proximity to the tree. In the event of adverse weather conditions, there is the possibility of any tree despite good report surveys, falling over.

In the event of a falling tree causing damage to residential or non-residential buildings in their proximity, no liability will attach to this firm, in the event of damage by such trees, to any person, any building public or private, or any mechanical vehicle or otherwise. Recommendations made in this report are subject to the knowledge and expertise of the qualified Arborist that carried out the above inspections.

Signed John Ward

Dated: 23th March 2020
Updated: 6th May 2021
John Ward

ISA Certified Arborist

Section 3

Outline Landscape Works Specification

Incorporating a

Landscape Management Plan

Table of Contents

Outline Landscape Works Specification

1 SPECIFICATIONS FOR SUPPLY OF NURSERY STOCK

1.1 Supply of nursery stock:

The nursery stock material will be delivered following consultation between the employer's representative, landscape Contractor and the selected nursery. It is intended to serve notice of delivery by means of phased orders at least two months prior to commencement of the dormant season in November of that year. Delivery will be at all times by means of covered vehicles, and all plant material will be clearly labelled. The source of origin must be from the selected nursery, as no other additional stock from other nurseries will be permitted without prior inspection and approval

1.2 Nursery stock:

All plant material shall be good quality nursery stock, free from fungal, bacterial or viral infection, aphids, red spider or other insect pests and any physical damage. It shall comply with the requirements of B.S. 3936: Parts 1-10: 1965 Specification for Nursery Stock, where applicable.

All plants shall have been nursery grown in accordance with good practice and shall be supplied through the normal channels of the wholesale nursery trade. They shall have the habit of growth that is normal for the species. Country of origin must be shown in all cases for species grown from seed.

Unless otherwise stated, the plant materials shall be supplied in accordance with the following codes where stated:

1+0	1 Year old seedling
1+1	1 Year old seedling lined out for 1 year
1+2	1 Year old seedling lined out for 2 years
1+1+1	1 Year old seedling lined out for 1 year, lifted and lined out for one further year
2+2	2 Year old seedling lined out for 2 years
0/1	1 Year old Hardwood cutting
0/2	2 Year old Hardwood cutting
2X	Twice transplanted tree
3X	Three times transplanted tree
4X	Four times transplanted tree
P9	Containerised plant in 9cm pot
CG / c/g	Containerised plant
gt.	Girth
ht.	Height
RB / r/b	Rootball
BR / b/r	Bareroot
MS	Multi-stemmed
Ftd	Feathered trees

1.3 Species:

All plants supplied shall be exactly true to name as shown in the plant schedules. Unless stipulated, varieties with variegated and/or coloured leaves will not be accepted, and any plant found to be of this type upon leafing out shall be replaced by the contractor at his/her own expense.
Bundles of plants shall be marked in conformity with B.S. 3936: Part 1: 1965 and B.S. 3936: part 4: 1966. The nursery supplier shall replace any plants which, on leafing out, are found not to conform to the labels. Definitions of all terms used are in accordance with the following British Standards: -

B.S. No. 3936: Part 1: 1992 entitled "Nursery Stock- Trees and Shrubs"
B.S. No. 3936: Part 4: 1984 entitled "Nursery Stock- Forest Trees"
B.S. No. 3936: 1992 entitled "Specification for Nursery Stock"

1.4 Tree and Shrub Specifications:

Trees shall have a sturdy, reasonably straight stem, and a well-defined straight and upright central leader, with branches growing out of the stem with reasonable symmetry. The crown and root systems shall be well formed. Roots shall be in reasonable balance with the crown and shall be conductive to successful transplantation. All trees shall be clearly labelled.

1.4.1 Root-Balled Trees

Trees shall have a clear stem from ground level to the lowest branch and a total height as appropriate to the girth size, and the minimum girth as specified shall be measured at 1.0m above ground level– all as required under BS3936:

Part 1. Trees shall be well furnished with lateral fibrous roots, and shall be lifted without severance of major roots. All nursery stock trees shall have been undercut and provided with a rootball of min. diameter appropriate to girth and height. All rootballs shall be wire and hessian-wrapped.

1.4.2 Multistem Trees - Rootballed

Multistem trees shall have a minimum of 3no. stems originating from or near ground level (<0.3m) and be of reasonable bushiness and health, with a well grown root system and a total height as specified on the drawings and schedules. Trees shall be well furnished with lateral fibrous roots, and shall be lifted without severance of major roots. All rootballs shall be wire and hessian-wrapped. All multistem trees stock trees shall have been undercut a minimum of 3no. times and provided with a rootball of sufficient size and diameter to enable healthy transplanting and successful establishment and growth. All rootballs shall be wire and hessian-wrapped.

1.4.3 Container grown Shrubs, Ferns, Grasses, Perennials, Bamboo, Hedging

Containerised Shrubs and Climbers shall be of the size specified in the schedules, with several stems originating from or near ground level and of reasonable bushiness, healthy, vigorous and with a sound root system. Pots or containers shall be appropriate to the size of shrub supplied and clearly labelled. Shrubs shall not be pot bound or with girdled or restricted roots. Shoots and aerial parts shall be free of disease, and/or damaged leaves or shoots.

1.4.4 Hedging Stock – Bare-Root

Hedging stock shall be of size specified in the schedules, with several stems originating from or near ground level, with reasonable bushiness, healthy, vigorous and with a sound root system. Shoots, roots and aerial parts shall be free of disease, and/or damaged leaves or shoots. Transplants shall be not less than one year old. Trees of species not listed in B.S. 3936: Part 4: shall be sturdy, with a balanced root and shoot development. Size shall conform to the schedules. Trees shall be well furnished with lateral fibrous roots, and shall be lifted without severance of major roots. Roots shall be of the habit normal for the species, without deformation. Transplants shall be clearly labelled and wrapped in polythene from the time of lifting until planting to conserve moisture. Shoots, roots and aerial parts shall be free of disease, and/or damaged leaves or shoots.

1.4.5 Hedging Stock – Rootballed

Hedging stock shall be of size specified in the schedules, with several stems originating from or near ground level, with reasonable bushiness, healthy, vigorous and with a sound root system. Shoots, roots and aerial parts shall be free of disease, and/or damaged leaves or shoots. Such hedging shall be provided with a rootball of sufficient size and diameter to enable healthy transplanting and successful establishment and growth. Rootballs shall be hessian-wrapped only for any plant under 1m in height.

2 SPECIFICATIONS FOR CARE OF NURSERY STOCK

2.1 Protection:

The interval between the lifting of stock at the nursery and planting on site is to be kept to an absolute minimum. Plants shall be protected from drying out and from damage in transport. All stock awaiting transport shall be protected from the wind and frost and from drying out.

2.2 Damage

On completion of lifting of plants in the nursery, any broken shoots or severed roots shall be pruned, areas of damaged bark neatly pared back to sound tissue.

2.3 Inspections

The Employer's representative will inspect the hardy nursery stock during the execution of the works. **Only plants selected and approved in the landscape contractors selected nursery will be accepted on the site**.

2.4 Delivery and heeling in

All plants will be delivered on a phased basis as called up in advance in agreement with the Employer's representative and the appointed Landscape Contractor. In the event of the Employer's representative being dissatisfied with the care and attention given to the stocks, following heeling-in or arrival on site, he shall notify the Landscape Contractor who shall take steps to ensure careful heeling-in procedures. Any damaged plants must be replaced by the Landscape Contractor entirely at his own expense.

The preparation of the heeling-in area and its subsequent maintenance is the sole responsibility of the Landscape contractor. No responsibility for the maintenance of stock delivered to site will attach to the employer whilst stock is protected on site, even if the stock requires protection beyond the normal planting season.

3 SPECIFICATIONS FOR SITE OPERATIONS

3.1 Setting out:

Setting out shall be in accordance with site meetings with the Employer's Representative, and the drawings listed in the preliminaries. No planting works shall take place when the soil /fill is in a waterlogged condition or the ground is frozen. Transplants in mixtures shall be planted in staggered rows. Species shall be planted in groups, as indicated in the planting drawings. No planting shall take place until all planting holes (with ameliorants) have been inspected and approved by the Employer's Representative, or a person appointed by him as a representative, to ensure accordance with the specifications. No planting shall take place when ground conditions are frozen or waterlogged. All planting holes shall be opened and closed on the same day.

3.2 Earthworks, Soil and Grading

3.2.1 Stripping and storage of existing soil on-site

All soil removed during grading works is to be placed in storage bunds on-site. Topsoil must be stripped separately from subsoil for re-use in landscape works and must be fit for purpose. Topsoil would be defined as soil that has a high content of organic material, usually corresponding to the 'O' and/or 'A' horizon of the soil profile. Subsoil would be all mineral soils that do not have a substantial organic component. Where the difference between topsoil and subsoil is unclear, consult the Employer's Representative.

Subsoil that is excess to fill requirements is to be stored on-site in a designated location, to be agreed with the Employer's Representative. Subsoil shall be stored in stable mounds with side slopes of gradient no more than 1:2 and an overall height of no more than 2m. Mounds to be seeded with wildflower seed as per clause 3.3.3.

Topsoil shall be stripped using a tracked vehicle to avoid subsoil compaction. Avoid tracking over or compaction of the topsoil. Topsoil should be stripped and dumped to form the berms using the dump and back-actor method. Double handling of topsoil is to be avoided. Topsoil that has been compacted shall be removed off site and replaced at the contractor's expense.

Topsoil shall be stored in stockpiles of dimensions no greater than 10m long x 5m wide x 0.5m high, such that a long, narrow and low berm is created to preserve the intrinsic qualities (structure and soil life) of the topsoil whilst in storage. The topsoil shall be loose tipped to create the berm and lightly compacted with the back of a digger bucket to create a degree of compaction suitable for storage, with side slopes of gradient no more than 1:2. No machinery shall be run over the soil berm. Berms shall be seeded with grass seed as per clause 3.3.2.

3.2.2 Subsoil

(a) Supply of Subsoil

Existing subsoil shall be used for all grading works.
Imported subsoil – if required - shall be sourced from a reputable source and be free of waste, chemicals, large stones, builder's rubble and any other detritus.

(b) Formation of Slopes/Mounds

Subsoil to be used to form even slopes or mounding to contours shown on drawings. Subsoil to be formed to smooth contours to 150mm below finished levels indicated on drawings, where the area is to be grassed or 300mm.

(c) Formation of Grassed Areas

Subsoil to be graded accurately to contours / levels / falls / crossfalls shown on drawings.

3.2.3 Topsoil

(a) Supply of Topsoil

Existing topsoil may be used for all grading and planting works, if it complies with the following specification, which would also apply to imported topsoil, as required. It is expected that imported topsoil will be required for all planting areas.
Topsoil shall be sourced from a reputable source and be free of waste, chemicals, large stones, builder's rubble and any other detritus. Topsoil shall have good structure, be friable, fresh and free-draining with at least 20% organic content. Imported topsoil shall comply with BS3882: 1994, and shall be free draining sandy loam, clay or other approved. It shall be free of stones over 40 mm diameter, and stones over 10 mm diameter shall not exceed 5% by weight. It shall be free from subsoil, sods, roots of trees and shrubs, and rubbish. Topsoil shall be from the original

surface layer of grassland or cultivated land, to a maximum depth of 200 mm. Soils from woodland, heathland, bog or contaminated land will not be acceptable.

(b) Removal of topsoil:
In areas to be regraded, all topsoil should be stripped and stored as per following clauses.

(c) Weather and Soil Conditions
All work involving topsoil shall not be carried out, unless the Employer's Representative permits otherwise:
Where areas have been exposed to a cumulative rainfall exceeding 60mm over the preceding 28 days measured at a point approved by the Employer's Representative; or

- Where soil moisture content is wetter than the Plastic Limit (PL) of the soil less 3%. The PL of the soil can be assessed in the field as the minimum moisture content at which the soil can be rolled and moulded into a thin thread approximately 3mm in diameter without breaking or cracking and in a laboratory according to BS 1377:Part 2.
- When heavy rain is falling;
- During periods of severe frost when the soil is frozen. Handling frozen soil will cause damage to the soil structure.

(d) Topsoil Spreading
Topsoil shall be moved and spread only in dry weather. Before topsoiling, remove all stones, rubble and rubbish over 75mm diameter from the surface of the subsoil formation. Dig out any areas polluted by oil or chemicals and make up with clean soil. Loaders shall load from the base of the soil storage berm only. Placement of soil should be carried out using a tracked vehicle to avoid subsoil compaction. Reinstated areas of topsoil shall not to be tracked over. The topsoil shall be allowed to settle to a thickness of 300mm and the contractor shall make full allowance for such settlement in applying the topsoil. Uneven areas shall be topped up as necessary.

(e) Topsoil Depths & Provision
The following depths should be provided for topsoiled areas:

(i) Grassed Areas:	150mm
(ii) Bare-root planting:	300mm
(iii) Shrub planting:	450mm
(iv) Tree planting:	Pit to specified size, depending on size of tree (see relevant Clauses)

(f) Grading
Topsoil to be graded accurately to contours / levels / falls / crossfalls shown on drawings. Glazed / compacted areas of subsoil to be roughened or ripped as necessary. (Drainage to be installed where necessary to Engineer's specification.) Any compacted areas to be ripped after placing of soil.

(g) Compacted areas
Any areas identified as compacted following completion shall be deep ripped and re-graded or re-soiled as necessary, to ensure a free-draining soil gradient and to avoid anaerobic conditions developing in the topsoil.

3.2.4 Surface cultivation

Surface cultivation will consist of ploughing or rotovating the topsoil to a minimum depth of 450mm over shrub areas or 150mm over grass areas. Care to be taken to ensure that the subsoil is not brought to the surface. It shall then be worked to reduce the topsoil to a fine tilth. After cultivation, all debris, perennial weeds and stones over 25mm in any dimension are to be removed off site.

Final grading is to be carried out to ensure the true specified level and slope and to avoid minor ridges, dishing or other depressions where water may collect.

Unless otherwise stated, finished levels of grass and shrub planting areas will be 50mm above adjoining paving or kerbs, retaining wall copings, manhole covers etc. and levels will be arranged to give gentle falls for drainage and to avoid ponding hollows. Any area unduly compacted during the work of grading will be loosened by forking or harrowing. The use of heavy rollers to roll out mounds will not be permitted.

Unless otherwise stated, finished levels of topsoil, after settlement, to be:

1. 50mm above adjoining pavements and kerbs
2. 300mm higher for shrubs than for adjoining grass areas
3. married in with adjoining soil areas
4. all stones above 50mm diameter to be removed off site by the landscape contractor.

3.3 Seeding:

3.3.1 Amenity Grass Areas

Fine cut areas to be sown with Coburns 'Greenlawn' Grass Seed Mixture as detailed below or equal at a rate of 40g/sq.m together with fertiliser 10:10:20 at a rate of 50g/Sq.m

15% Dwarf Perennial Ryegrass
15% Dwarf Perennial Ryegrass
20% Dwarf Perennial Ryegrass
25% Strong Creeping Red Fescue
20% Chewings Fescue
5% Browntop Bentgrass

4 SPECIFICATIONS FOR PLANTING OPERATIONS

4.1 Tree Support:
All trees in pavement tree pits shall be anchored by means of root ball guying. Rootball is anchored by a timber frame (or equivalent support system – e.g. Platipus system) located around the top surface of the rootball, which is fastened by wires (4mm galvanised cable guying wire) to 'dead man' anchors, kerbstones or timber beams located below the rootball.

4.2 Stakes:
Round stakes shall be of peeled larch, pine or Douglas fir, preserved with a water-borne copper chrome arsenic composition in accordance with I.S. 131. All trees to be double staked with crossbar 100x25mm securely attached to uprights with galvanised nails. Stakes shall be round, 1.8m long, 75mm in diameter. Stakes shall be pointed at the butt end. Set stakes vertically in the pit and drive before planting. Drive stake with a wooden maul or cast-iron headed drive. Sledgehammer should not be used. Stakes shall be driven into the excavated planting pit to a depth of 1000mm.

4.3 Tree ties:
Tree ties shall be of rubber, PVC or proprietary fabric laminate composition and shall be strong and durable enough to hold the tree securely in all weather conditions for a period of three years. They shall be flexible enough to allow proper tightening of the tie. Ties shall be min. 25mm wide for 120cms – 150cm height trees and min. 38mm for larger sizes. They shall be fitted with a simple collar spacer to prevent chafing. Two ties per tree shall be applied to standards; for staked transplants, one tie per tree is required.

4.4 Protection:
The interval between the lifting of stock at the heeling-in area and planting on site is to be kept to an absolute minimum. Plants shall be protected from drying out and from damage in transport. All stock awaiting planting on site shall be stored in a sheltered place ***protected from the wind and frost and from drying out.***

All transplants shall be wrapped in polythene from the time of lifting to conserve moisture. Except when heeled-in, they shall be protected in polythene at all times until planted into their final position on site.

4.5 Damage:
On completion of planting any broken branches shall be pruned, areas of damaged bark neatly pared back to sound tissue.

4.6 Watering / Fertilisers:
All trees and shrubs shall be soaked in water for one hour prior to planting. Fertilisers shall conform to BS 5581: 1981. Fertiliser must be mixed through and incorporated into the base of the planting hole and covered with soil in order to avoid roots of plants coming in direct contact. Follow manufacturer's instructions for all chemical products.

4.7 Tree planting:
Trees shall be planted at the same depth as in the nursery, indicated by the soil mark on the stem of the tree. They shall be planted in the centre of the planting pit and planted upright. Stones or other rubbish over 75mm shall be removed. Supply and install the staking / guying system as per clauses 4.1-4.4. Backfill planting hole with excavated topsoil, and remove all stones and debris, firming plant into position. Upon completion of planting, all pits shall be raked over lightly to leave an even surface and neat appearance. All stones greater than 25mm dia. to be removed. Provision should be made for the watering of root-balled trees in the first year following planting.

4.7.1 Specimen Trees
Excavate tree pits to 1200mm x 1200mm x 1000mm deep. Farmyard manure 80mm deep and 100g of 0.10.20 shall be applied to each tree pit prior to planting. Farmyard manure shall consist predominantly of faecal matter and shall be free of loose, dry straw and undigested hay. It shall be free of surplus liquid effluent. Install tree support system as per clause 4.1. Fill planting hole with topsoil as per clause 3.2.2, and remove all stones and debris, firming plant into position.

4.7.2 Small Trees / Large Shrubs
Excavate tree pits to 750mm x 750mm x 750mm deep. Farmyard manure 60mm deep and 100g of 0.10.20 shall be applied to each tree pit prior to planting. Farmyard manure shall consist predominantly of faecal matter and shall be free of loose, dry straw and undigested hay. It shall be free of surplus liquid effluent. Install tree support system as per clause 4.1. Fill planting hole with topsoil as per clause 3.2.2, and remove all stones and debris, firming plant into position.

4.8 Container Grown Shrubs, Grasses, Ferns, Perennials P9 / 20-30 / 30-40cm
Excavate planting hole to a depth of 300mm x 300mm x 300mm deep; the base to be broken to a depth of 50mm and glazed sides roughened. Apply FYM to base of hole to a depth of 150mm and 30g of 0:10:20 per planting pit. Backfill planting hole with excavated topsoil, and remove all stones and debris, firming plant into position.

4.9 Containerised Shrubs, 40-60cm
Excavate planting hole to a depth of 500mm x 500mm x 500mm deep; the base to be broken to a depth of 50mm and glazed sides roughened. Apply FYM to base of hole to a depth of 150mm and 50g of 0:10:20 per planting pit. Backfill planting hole with excavated topsoil, and remove all stones and debris, firming plant into position.

4.10 Hedging 25-30cm, 40-60cm
Excavate trench to a depth of 300mm x 300mm wide; the base to be broken to a depth of 50mm and glazed sides roughened. Incorporate 200mm depth of well-rotted FYM into base and cover with 150mm soil min. Apply 100g 0:10:20 per metre into backfill. Backfill planting hole with excavated topsoil, and remove all stones and debris, firming plants into position.

4.11 Hedging 90-120cm
Excavate trench to a depth of 500mm x 500mm wide; the base to be broken to a depth of 50mm and glazed sides roughened. Incorporate 200mm depth of well-rotted FYM into base and cover with 150mm soil min. Apply 100g 0:10:20 per Sq.m into backfill. Backfill planting hole with excavated topsoil, and remove all stones and debris, firming plants into position.

4.12 Aquatic Plants (N/A)
Any aquatic plants are to be planted into the topsoil in accordance with specifications above for container-grown plants, excluding fertiliser. Following planting, the area is to be flooded with water and kept topped up to at least 50mm depth throughout the plant establishment period.

4.13 Ground finish:
Upon completion of planting, all ground finish shall include for the removal of stones greater than 25mm excavated during the course of the digging for planting purposes. All soil surfaces should be even and free of mounds, rutting or hollows.

4.14 Spraying:
Following planting, weed free circles to be formed around individual plants, as directed, using an approved broad-spectrum contact herbicide, as approved by the Employer's representative, in mid-spring following planting. Herbicide to be applied using controlled drop applicator. The contractor shall be responsible for keeping the ground (1m diameter circle) around all planted material weed free by means of herbicidal application, using approved sprays, during the course of the contract. Weeds to be removed include grasses ,broad-leaved annual and perennial weeds and all noxious weeds.

4.15 Weed control fabric
The weed control fabric shall be 105gsm and shall suppress weeds whilst allowing water, air and nutrients to pass through. Mypex™, Plantex® or equal woven fabric product acceptable. Cut with a scissors or knife. All sharp objects should be removed from the surface soil prior to laying the weed suppressing geotextile. Overlap adjacent rolls by at least 10cm. Membrane to be pegged to ground using proprietary plastic pegs.

When planting into the geotextile membrane an 'X' shaped notch should be cut into the membrane for each individual plant, to allow for excavation. Planting should resume as per species specification. Excavated material should not be stored on geotextile and the membrane area should be thoroughly swept of any residual material prior to application of finished aggregate or mulch.

Membrane to be applied to all planting and gravel areas.

4.16 Bark mulch
Bark Mulch to be 'Golden Pine Bark' by Growise or equal and approved. The product shall consist of matured Conifer Bark with an even nominal particle size distribution of 5-75mm with less than 5% dust and fines and less than 15% wood content. The pH to be between 4.5 and 5.5. The product shall be pest, disease and weed free and not have been treated with Methyl Bromide or any additives. The product shall have been tested in accordance with the requirements of BS 4790:1987, for fire resistance.

The natural heat treatment maturing process shall have been sufficient to ensure that excess volatile substances are driven from the product. During the process, temperatures within the product heaps must exceed 50°C for a minimum 14 day period, followed by a further period of stabilisation.

Lay Bark Mulch to a finished depth of 75mm allowing at least 10% for settlement after 30 days. All such mulch of good quality from an approved source will be inspected by the Employer's representative prior to delivery. All product volumes to be calculated using The Bulk Density method, as set out in BS EN 12579:2000 and BS EN 12580:2000. Slow release Nitrogen fertiliser to be applied to soil prior to mulching.

Landscape Management Plan

1 INTRODUCTION

The purpose of this Landscape Management Plan is to provide guidance and specifications for the maintenance requirements of the landscape elements of the proposed development. This will cover all of the landscape typologies, both existing (hedgerows and mature trees) and proposed (trees, shrubs, hedging, etc.) on-site to ensure that all maintenance operations required for the efficient and effective management of the landscape are characterised and defined. The plan will provide a set of measurable performance standards that can be applied to evaluate landscape maintenance works carried out on the site.

2 NATURE OF SITE

Landscape works proposed include extensive planting: specimen trees, shrubs, bare-root planting and perennials. Hard landscape works include feature paving, ramps, steps, lighting and drainage.

3 TIMEFRAME & PROGRAMMING

See taken in charge plan for detail on areas which are to be taken in charge. The maintenance and management criteria of these areas will be determined by the local authority. All other areas should adhere to the following recommendations. A detailed programme of works will be agreed with the Contractor prior to maintenance operations commencing, in each year. A sample maintenance programme is contained at Point 8.

4 AIMS & OBJECTIVES

4.1 General

Fundamentally, the aim of landscape management is to ensure that all external areas are kept in good condition, as perceived and expected by the users. The Landscape Management Plan aims to provide a manual for the maintenance requirements of the park and adjacent landscapes. It will define and specify all necessary operations for the efficient and effective management of the landscape in order to ensure that each area is appropriately and sustainably maintained.

4.2 Horticultural / Sylvicultural Objectives

Horticultural and sylvicultural aims relate to the appropriate management operations for all plants and trees. The specific horticultural objectives are as follows:

- All plants to be maintained so that they remain in good health;
- All plants to have a habit and form consistent with species type and aesthetic objectives;
- Specialist operations for particular types of plants where necessary to achieve the aesthetic or functional objectives, e.g. pruning, dead-heading of flowering plants, formative clipping, etc. are included in the plan;
- Areas surrounding plants are to be maintained in such a way that potential threats to plant viability are addressed, e.g. weed control (particularly invasive and noxious weeds);
- Recognition of planting (including trees) at the end of its viable life is important to ensure that it is removed and replaced in a timely manner to avoid eyesores.

4.3 Performance Standards

Performance Standards can be defined as follows in the context of this plan: ***written specifications of the conditions that will exist when satisfactory works are completed.*** Performance standards will be measurable against the specified outcomes required for a particular operation, within a particular area. Performance standards must be upheld by the contractor at all times and will be monitored on an ongoing basis through regular site inspections.

Performance standards are specified in section 5 of this document. All required maintenance operations are defined and detailed to provide both specifications for the landscape contractor to follow and a set of measurable outcomes to appraise and value the contractor's performance against the requirements of the contract.

4.4 Environmental Considerations

Responsible and sustainable landscape management is about balancing the performance standards with the required standard of maintenance. The following principles have guided the development of the specification:

- **Minimise use of non-renewable resources**
  - e.g. reduce lawn areas to reduce consumption of fossil fuels, reduce use of chemical inputs such as pesticides, where possible.
- **SuDS**
  - Sustainable Drainage Systems are to be included in the final design swales in landscape areas and tree pits with drainage gravel or structural soil materials for soakaway.

- **Utilise low input systems**
  - Includes measures such as: mulching instead of herbicide use, where possible.
- **On-site green waste recycling / mulching / composting**
  - Avoids excessive transportation and use of landfill
- **Use of environmentally friendly products where possible**
  - e.g. biodegradable herbicides, biodegradable tree ties, timber stakes.
- **Control of Invasive Species**
  - It is an objective of this plan to control and prevent the spread of invasive species, and in particular, Giant Hogweed, in order to protect the biodiversity of the landscape.
- **Protection of site resources**
  - Appropriate maintenance will result in the protection of existing trees, vegetation and soil resource of the site.

5 SPECIFICATIONS FOR LANDSCAPE MAINTENANCE OPERATIONS

5.2 Shrub Planting

(i) Groundcover / Mixed Borders / Mass Shrub Plantation

Criterion	Performance Standards for Designated Level of Prominence		
	High	**Medium**	**Low**
Aesthetic / functional requirements	Shrub planting areas shall be kept clean at all times, with an even finish. Plants to have a healthy, lush, neat appearance, typical for plant species and time of year.	Shrub planting areas shall be kept clean at all times, with an even finish. Plants to have a healthy, lush appearance, typical for plant species and time of year.	Shrub planting areas shall be kept clean at all times, with an even finish. Plants to have a healthy appearance, typical for plant species and time of year.
Weed Control	No weeds permitted in the shrub area. Established shrub areas may be treated with an approved residual herbicide to provide year round weed control.	Weeds shall not be allowed to cover more than 5% of the ground at any one time, neither shall weeds exceed 50mm in height. Residual herbicide permitted for established shrub areas.	Weeds shall not be allowed to cover more than 10% of the ground at any one time, neither shall weeds exceed 100mm in height. Residual herbicide permitted for established shrub areas.
Bark Mulch	Required – 75mm deep; to be kept topped up at all times.	Required – min. 50mm deep; to be kept topped up at all times.	Not required in all cases.
Fertiliser	Annual feeding with 50-100g/sq.m of general-purpose fertiliser in February. (Rake back mulch prior to application.)	Annual feeding with 50g/sq.m of general-purpose fertiliser in February. (Rake back mulch prior to application.)	No feeding required unless plants are suffering notable deficiency.
Pruning / Clipping	Regular pruning as necessary to maintain the typical size and form of the plant, for plant health, for sightlines and to maintain best appearance (to include damage by traffic, salt spray, vandalism, etc.); all clippings to be gathered at every pruning and disposed of in designated area or off-site.	Pruning once per annum to maintain the typical size and form of the plant, for sightlines and for plant health; all clippings to be gathered at every pruning and disposed of in designated area or off-site.	No pruning required, unless nuisance is being created by overhanging branches.
Edging	Beds to be edged by hand or edging machine regularly to leave an even, straight edge and to ensure that the shrubs or soil do not protrude past the edge by more than 25mm.	Beds to be edged by hand or edging machine twice per annum to leave an even, straight edge. Shrubs or soil not to protrude past the edge by more than 50mm.	Edging required to prevent soil creep and nuisance only.
Watering	Watering required to ensure consistent availability of water to plants during periods of drought (i.e. after more than 5 days)	Watering required only in periods of prolonged drought (i.e. after more than 2 weeks)	Watering not required unless plants are showing signs of negative physiological effect by drought.
Dead-heading	Remove fading flowers from shrubs regularly during flowering season.	Not required.	Not required.

(ii) Specimen Shrubs

Criterion	Performance Standards
Aesthetic / functional requirements	Specimen shrub planting areas shall be kept clean at all times, with an even finish. Shrubs to have a healthy, lush appearance at all times, typical for plant species and time of year.
Weed Control	No weeds permitted in the shrub area. Established shrub areas may be treated with an approved residual herbicide to provide year round weed control.
Bark Mulch	Required – 75mm deep; to be kept topped up at all times.
Fertiliser	Annual feeding with 50-100g/sq.m of general-purpose fertiliser in February. (Rake back mulch prior to application.)
Pruning / Clipping	Regular pruning as necessary to maintain the typical size, habit and form of the plant, for health and to maintain best appearance; all clippings to be gathered at every pruning and disposed of in designated area or off-site.
Watering	Watering required to ensure consistent availability of water to plant during periods of drought (i.e. after more than 5 days) - minimum

(iii) Hedge – Free Growing

Criterion	Performance Standards
Aesthetic / functional requirements	Even, clean finish to ground plane. Hedge to have a healthy, lush appearance, typical for plant species and time of year. Relatively informal habit acceptable.
Weed Control	No weeds permitted in the hedge area. Established hedge areas may be treated with an approved residual herbicide to provide year round weed control.
Bark Mulch	Required – 50mm deep; to be kept topped up at all times.
Fertiliser	Annual feeding with 50g/sq.m of general-purpose fertiliser in February. (Rake back mulch prior to application.)
Pruning / Clipping	Pruning once per annum as necessary to maintain the required height and width, and prevent "leggy" growth; all clippings to be gathered at every pruning and disposed of in designated area or off-site. Laying may be required for Hawthorn and Blackthorn hedges if hedge growth becomes thin at the base.
Watering	Watering required only in periods of prolonged drought (i.e. after more than 2 weeks)

(iv) Hedge – Pruned (including topiary)

Criterion	Performance Standards
Aesthetic / functional requirements	Even, clean finish to ground plane. Hedge to have a healthy, lush appearance, typical for plant species and time of year. Formal habit to be maintained throughout year. Formal habit of hedge to be defined and maintained at all times.
Weed Control	No weeds permitted in the shrub area. Established shrub areas may be treated with an approved residual herbicide to provide year round weed control.
Bark Mulch	Required – 75mm deep; to be kept topped up at all times.
Fertiliser	Annual feeding with 50-100g/sq.m of general-purpose fertiliser in February. (Rake back mulch prior to application.)
Pruning / Clipping	Regular pruning as necessary to maintain the required height and width of the plant, to maintain best appearance; all clippings to be gathered at every pruning and disposed of in designated area or off-site.
Watering	Watering required only in periods of prolonged drought (i.e. after more than 2 weeks)

(v) Native Shrub Plantation

Criterion	Performance Standards

Aesthetic / functional requirements	Even, clean finish to ground plane. Hedge to have a healthy, lush appearance, typical for plant species and time of year. Relatively informal habit acceptable.
Weed Control	Weeds shall not be allowed to cover more than 5% of the ground at any one time, neither shall weeds exceed 50mm in height. Residual herbicide permitted for established areas.
Bark Mulch	Required for high prominence areas; recommended for medium areas – 50mm deep; to be kept topped up at all times.
Fertiliser	Not required.
Pruning / Clipping	Pruning once per annum for shrubs such as Dogwood and Guelder Rose or to control height and spread when necessary.
Watering	Watering required only in periods of prolonged drought (i.e. after more than 2 weeks)

(vi) Scrub - naturally occurring

No maintenance operations required, except to ensure that any edge plants are kept cut back at least 1m from road edges and tidy where visible or prominent.

5.3 Trees & Woodlands

(i) General:

- Canopies overhanging a pedestrian path to be maintained to 2.2m and canopies overhanging vehicular access to 4m.
- Limb damage caused by wind, passing traffic, etc. to be pruned resulting in a clean even wound.
- No signs, security boxes, etc. to be attached to trees.
- Surface tree roots not to cause a trip or mowing hazard. In grass areas, top up soil over roots and re-seed.
- Raised paviors or cracked/bulging walls due to root growth are to be reported to the Contract Administrator.
- Exposed roots from construction works to be kept moist by wrapping damp hessian around roots until soil is backfilled and then apply a one off generous application of water. Root damage to be pruned resulting in a clean even wound prior to backfilling / topsoiling.
- Control of ivy and suckering on the trunks of trees within falling distance of activity
- Informal monitoring of trees for change of condition or evidence of a fungal fruiting body.
-

(ii) Specimen, Solitary Trees

All trees to be maintained in accordance with requirements for species and habit to be maintained in accordance typical form for tree. Tree trunk will be kept visible for defect inspection with control of ivy and removal of suckering. Mulch 1m diameter will be maintained around all individual trees within grassed areas. Stakes and ties to be retained for a maximum period of 3 years, with tie loosened annually and both stake and tie to be removed after 3 year period. All nursery marking, bamboo and labels to be removed off all trees. Tree grilles in hard surface areas to be maintained weed free.
Any visible change in condition to be reported.

(iii) Tree Groups, Woodland, Grid, Hedgerow Trees

Such areas shall be kept free of noxious and pernicious weeds at all times. Mulch or spray rings 1m diameter will be maintained along group perimeter and around all plants in young woodland areas where canopy cover has not been achieved. Established woodland areas shall not be treated with herbicide except where necessary for the removal of noxious and invasive weeds including Ragwort, Gorse, Thistle, and Dock, hogweed, bramble and any others. Japanese knotweed shall not be allowed to establish in any woodland areas. Bramble should not exceed 20% of ground cover of any woodland. Ivy shall be controlled and shall not be allowed to establish itself on trees along the perimeter and within falling distance of activity within woodland areas. Understorey (excluding saplings) not to exceed 1m in height in order to retain visibility for user safety in areas of activity. Tree numbers not to exceed 4 per sq.m of trees with a girth of less than 250mm and numbers not to exceed 2 per sq.m for trees with a girth of over 300mm. Fallen or felled trees in woodland areas to be maintained on-site where permissible, for reasons of biodiversity and ecology which contribute to the overall health of the woodland.

5.4 Herbaceous Perennial Planting (including Ferns and Ivy)

(i) Bulbs

Watering: Ensure that bulbs have adequate water throughout growth period, up until cutting back occurs (see below).
Fertiliser: Apply approved general purpose fertiliser to all bulb areas at nominal rate of 35g/sq.m in late February.
Cutting Back: Cut back dead foliage to ground level six weeks after the end of flowering (or earlier if foliage is yellow and straw-like). Do not tie or knot the leaves.
Deadheading: *High prominence areas only.* Deadhead flowers by cutting back spent flowers to the base of the flower stalk.
Note: Herbicides may not be used in or around bulb areas.

5.5 Hard Landscape Surfaces & Signage

Hard Standing including roads, paved areas, pavements, and kerb-lines - shall be kept clean at all times, with no growth of weeds and without moss infestation. Roads and kerb lines shall be kept free of litter and build up of grit and debris through the implementation of a regular sweeping program.

(i) Weed Control

All paved areas such as footpaths, kerb lines, feature paving, gravel areas, etc., throughout the site are to be maintained weed free at all times. The application of a suitable broad-spectrum herbicide e.g. Glyphosate (*Roundup Bi-Active* or equal and approved) shall be applied 3no. times per annum to achieve this. Once per annum a suitable chemical to treat moss shall be applied where it has established on hard surfaces. An initial physical treatment, such as scraping using a spade, will be required to remove existing moss growth prior to spraying.

(ii) Sweeping

Sweeping shall mean sweeping of feature paving areas, footpaths and kerb lines along all public roads (edge of road) and removal of all grit, rubbish and leaves from these areas. Soil wash from beds on to paved areas should also be swept. This work to be executed fortnightly.
Note: Particular attention is required during the period of October/ November to deal with leaf fall.

(iii) Cleaning

Cleaning shall mean the removal of paper, plastic bags and all other rubbish. Cleaning shall be carried out as follows:

- Fine cut grass areas, all paved and hard standing areas, footpaths and kerb lines: This work to be executed prior to grass cutting on each grass cutting visit. Cleaning shall be carried out 36no. times per annum, including winter.
- Rough cut grass areas: prior to each scheduled grass cut, minimum 8no. times per annum.
- Tree groups, boundary tree areas, shrub maintenance areas, all other areas: 8no. times per annum.

Cleaning shall also include the removal of grit and rubbish from road gullies, drains, Aco drains and collapsible bollards twice per year.

(iv) Signage

All campus signs are to be cleaned to a high standard 4 times per year.

(v) Gullies

All roadside gullies are to be inspected monthly and if full or blocked, must be cleared out as appropriate.

5.6 Natural Areas

No maintenance operations are permitted within areas designated as natural zones. Neither is dumping of any arisings, storage of materials or any other related activity.

5.7 Vacant Plot Areas/Rough Ground Areas

These areas shall be kept free of noxious, invasive and other pernicious weeds, including ragwort, thistle, dock, gorse, hogweed, bramble and Japanese Knotweed at all times.

5.8 Weed Control

5.8.1 General

Minimal amount of herbicidal chemicals are to be utilised on the site, with non-chemical means of weed control to be preferred (mulching, mechanical control, hand weeding, etc. where feasible). Biodegradable herbicides are to be preferred where herbicide use is required. Prior to executing weed control involving the use of herbicides, details of the products to be used including a Material Safety Data Sheet (MSDS) for each product is to be provided to the

Contract Administrator for each of the herbicides proposed. A sample herbicide information chart is included in Addendum A.

Where translocated herbicides are applied, spray drift should be avoided and spray guards fitted to apparatus. Where feasible, spot treatment using CDA (Controlled Droplet Applicator) or glove preferred. Use of residual herbicides shall not be used in areas of herbaceous planting, in the initial year following planting of new shrubs or over areas of bare ground within shrub beds where replacement planting is to be carried out. Hand weeding in planting beds will be required where there is a large component of herbaceous material, bulbs or prostrate groundcover plants.

5.8.2 Invasive Weeds

Invasive weeds of any kind, most particularly Japanese Knotweed, Winter Heliotrope, Giant Hogweed and Himalayan Balsam (all identified on this site) shall not be allowed to establish in any area of the site. It will be the responsibility of the contractor to be able to identify same and treat at first sign of emergence. Treatment for all except Japanese Knotweed to consist of removal of weed by mechanical means, treating any remaining plant parts with Glyphosate (e.g. *Roundup* or equal).

Recommended Treatment for Giant Hogweed

A survey of the site should be carried out in spring and summer each year to identify if Giant Hogweed is present. When identified, Giant Hogweed should immediately be treated with Glyphosate (e.g. Roundup or equal). The herbicide is to be sprayed onto the plant or liberally applied using a glove. The plant should be left in-situ until completely dead and removed carefully when entirely withered. If the first treatment does not work, a second treatment should be applied. Following removal, the infected site must be monitored on a weekly basis for signs of re-emergence. Re-emergent plants should be treated in the same way, no later than October in any given year.

6 DUTIES OF CONTRACTOR; EVALUATION & PAYMENT PROCEDURES

The contractor shall be required to complete a site specific maintenance programme and attend site in accordance with the program agreed with the Contract Administrator. During the course of the contract the contractor shall supply after each visit to site a record of attendance using site attendance record sheets. These should be signed by the contractor's site foreman and manager and retained in a file for use as an appendix to the payment application. A sample site attendance sheet is given in Addendum C. Failure to complete works on the prescribed date, may result in determination of the contract, except where an adjustment to program has been agreed in advance with the Contract Administrator.

At the end of every month the contract manager shall complete the monthly report sheets to clarify the completion of works for the particular month. Items of work not completed shall be noted and a timeframe for their completion indicated. The forestalled works must be attended to at the first opportunity in the month following the submission of the monthly report sheet, unless exceptional circumstances or bad weather prevent the work from being completed. In this case the work shall be attended to, as soon as is practicable, and by agreement with the Contract Administrator.

Monthly program sheets, contained in Addendum B, shall be signed by the contractor's manager and forwarded to the Contract Administrator for verification. Upon verification the document will be returned to the contractor and shall be attached at the time of payment application. If necessary, a site visit will be undertaken with the contractor to verify completion of works. The completed monthly report sheets shall be used as the basis for payment. Items of work not completed to the required standards shall be excluded from payment for that particular month. Should the Contract Administrator / Property Manager be dissatisfied with the quality of work within a particular month then a reasonable sum of money shall be withheld in proportion to the amount of incomplete work or work that is not up to standard. A minimum of 80% of work must be complete or satisfactory in order for payment to be made for a particular month.

In relation to Health and Safety, the landscape contractor will be appointed Project Supervisor for the Construction Stage under current health and safety legislation. Therefore, a safety file must be maintained by the contractor and be made available for inspection upon request. All possible precautions and risk management strategies must be in place in relation to safety of employees, personal protective equipment, use and maintenance of equipment/vehicles, signage when works are underway, procedures for closing off areas while works are in progress, traffic management, etc. as required. Any incident or accident must be reported to the Contract Administrator and recorded in the safety file.

7 INSPECTIONS BY EMPLOYER

As part of the management of this contract, eight critical inspections per annum shall be arranged with the Contract Administrator in attendance. These may not be notified to the landscape contractor. The Contract Administrator will produce a report of the site visit, commenting on the appearance of the site and examining each aspect of work in detail. The Landscape Architect may also direct resources to a certain area of work, in agreement with the Property Manager. It is at such dates that standards will be reviewed, problems arising rectified and issues of dispute arising from the concerned parties will be settled.

A preliminary schedule of critical inspection dates is as follows:

1. February
2. March
3. April
4. May
5. June
6. July
7. August
8. September
9. October
10. December

8 MONTHLY MAINTENANCE OPERATIONS SCHEDULE

The following tables give an indicative outline of the required monthly maintenance operations, based on the specification outlined above.

Maintenance Program - January

Item	Description
1.1	Yearly maintenance Shrub and tree planting Tree pruning Hedge cutting
1.2	Weed free circles around trees/whips Check tree stakes and ties
1.3	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3 Road/Paved area sweep 1 Road Gulley cleaning

Maintenance Program - February

Item	Description
2.1	Yearly maintenance Shrub and tree planting Tree pruning Check tree stakes and ties
2.2	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3 Road/Paved area sweep 1 Road Gulley cleaning

Maintenance Program - March

Item	Description
3.1	Yearly maintenance Shrub and tree planting Shrub Pruning Tree pruning Hedge cutting Hedgerow cutting Hand Weeding in shrub areas

	Weed free circles around trees/whips
3.2	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3 Weed/Moss control to hard landscape areas Clean all signs

Maintenance Program - April

Item	Description
4.1	Yearly maintenance Shrub and tree planting Shrub Pruning Hedgerow cutting Herbicide application to shrub/woodland areas Hand Weeding in shrub areas Weed free circles around trees/whips Apply fertiliser
4.5	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3 Weed/Moss control to hard landscape areas

Maintenance Program - May

Item	Description
5.1	Yearly maintenance Shrub and tree planting Hedge cutting Herbicide application to shrub/woodland areas Hand Weeding in shrub areas Apply fertiliser Watering

5.5	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3 Weed/Moss control to hard landscape areas Road/Paved area sweep 1
5.6	Watering

Maintenance Program - June

Item	Description
6.1	Yearly maintenance Shrub and tree planting Tree pruning Herbicide application to shrub/woodland areas Hand Weeding in shrub areas Weed free circles around trees/whips Apply fertiliser Watering
6.4	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3 Weed/Moss control to hard landscape areas Road/Paved area sweep 1 Clean all signs
6.5	Watering of all trees & shrubs

Maintenance Program - July

Item	Description

7.1	Yearly maintenance - Shrub and tree planting Hand Weeding in shrub areas Watering
7.3	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3
7.4	Watering of all trees & shrubs

Maintenance Program - August

Item	Description
8.1	Yearly maintenance Shrub and tree planting Shrub Pruning Hand Weeding in shrub areas Weed free circles around trees/whips Watering
8.3	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3 Road/Paved area sweep 1
8.4	Watering of all trees & shrubs

Maintenance Program - September

Item	Description
9.1	Yearly maintenance Shrub and tree planting Shrub Pruning Hedge cutting Herbicide application to shrub/woodland areas Hand Weeding in shrub areas Weed free circles around trees/whips Apply fertiliser Watering
9.5	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3 Weed/Moss control to hard landscape areas Road/Paved area sweep 1 Road Gulley cleaning Clean all signs
9.6	Watering of all trees & shrubs
9.7	Attenuation Pond - cleaning, removal of detritus

Maintenance Program - October

Item	Description
10.1	Yearly maintenance Shrub and tree planting Tree pruning Hedge cutting Hedgerow cutting Herbicide application to shrub/woodland areas Hand Weeding in shrub areas Weed free circles around trees/whips Apply fertiliser
10.2	Hard Standing Maintenance and Cleaning Litter pick 1

	Litter pick 2 Litter pick 3 Weed/Moss control to hard landscape areas Road/Paved area sweep 1 Road/Paved area sweep 2

Maintenance Program - November

Item	Description
11.1	Yearly maintenance Shrub and tree planting Hedgerow cutting Check tree stakes and ties
11.2	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3 Road/Paved area sweep 1 Road/Paved area sweep 2 Road/Paved area sweep 3

Maintenance Program - December

Item	Description
12.1	Yearly maintenance Shrub and tree planting Tree pruning Check tree stakes and ties
12.2	Hard Standing Maintenance and Cleaning Litter pick 1 Litter pick 2 Litter pick 3

	Road/Paved area sweep 1 Clean all signs